SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

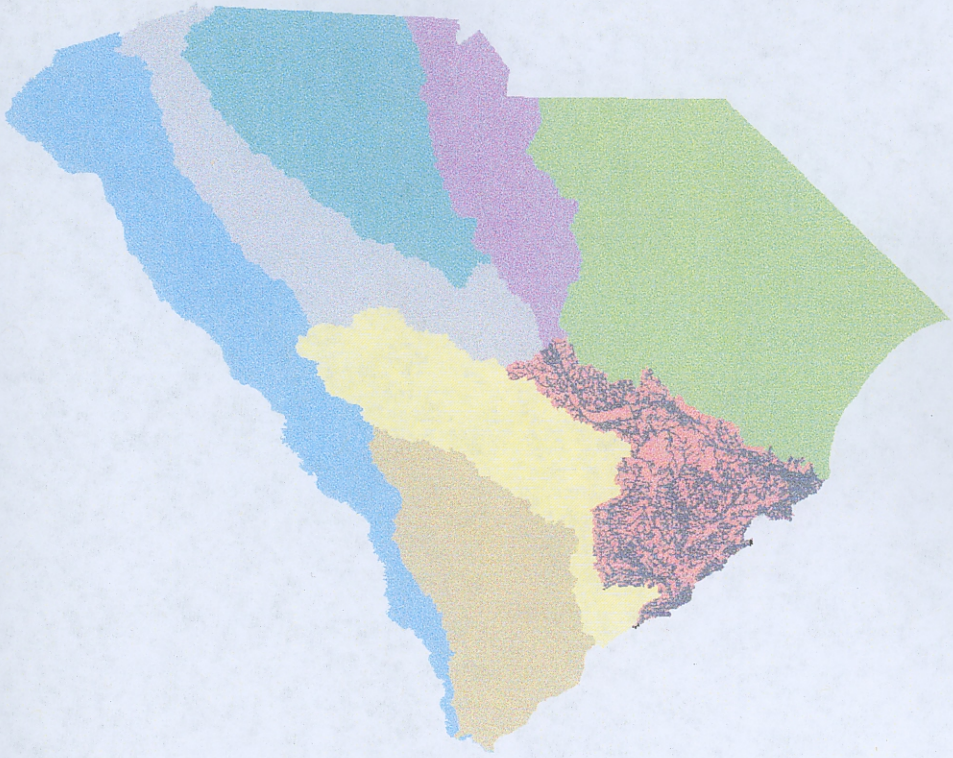
WATERSHED WATER QUALITY ASSESSMENT

SANTEE RIVER BASIN

DECEMBER 2005

Watershed Water Quality Assessment

Santee River Basin



South Carolina Department of Health and Environmental Control

Bureau of Water

2600 Bull Street

Columbia, SC 29201

803-898-4300

www.scdhec.gov/water

Watershed Water Quality Assessment – Santee River Basin

December 2005

Technical Report No.
013-05

D H E C

PROMOTE PROTECT PROSPER

Prepared By:

Cynthia M. Lacy
Watersheds and Planning
Division of Water Quality
Bureau of Water

Cynthia M. Lacy
Author or Editor

10-10-05
Date

Section Manager

10-10-05
Date

Division Director

10/10/05
Date

PREFACE

In 1993, the South Carolina Department of Health and Environmental Control (SCDHEC) published the first in a series of five watershed management documents. The first in that series, Watershed Water Quality Management Strategy: Savannah-Salkehatchie Basin, communicated SCDHEC's innovative watershed approach, summarizing water programs and water quality in the basins. The approach continues to evolve and improve.

The watershed documents facilitate broader participation in the water quality management process. Through these publications, SCDHEC shares water quality information with internal and external partners, providing a common foundation for water quality improvement efforts at the local watershed or large-scale, often interstate, river basin level.

Water quality data from the Santee River Basin was collected during 1998 and 2002 and assessed during this third five-year watershed management cycle. This updated atlas provides summary information on a watershed basis, as well as geographical presentations of all permitted watershed activities. A waterbody index and facility indices allow the reader to locate information on specific waters and facilities of interest.

A brief summary of the water quality assessments included in the body of this document is provided following the Table of Contents. This summary lists all waters within the Santee River Basin that fully support recreational and aquatic life uses, followed by those waters not supporting uses. In addition, the summaries list changes in use support status; those that have improved or degraded over the five years since the last strategy was written. More comprehensive information can be found in the individual watershed sections. The information provided is accurate to the best of our knowledge at the time of writing and will be updated in five years.

General information on Santee River Basin Watershed Protection and Restoration Strategies can be found under that section on page 28, and more detailed information is located within the individual watershed evaluations.

As SCDHEC continues basinwide and statewide water quality protection and improvement efforts, we are counting on the support and assistance of all stakeholders in the Santee River Basin to participate in bringing about water quality improvements. We look forward to working with you.

If you have questions or comments regarding this document, or if you are seeking further information on the water quality in the Santee Basin, please contact:

Watershed Strategy Coordinator
SCDHEC Bureau of Water
2600 Bull St.
Columbia, SC 29201
(803) 898-4300
www.scdhec.gov/water

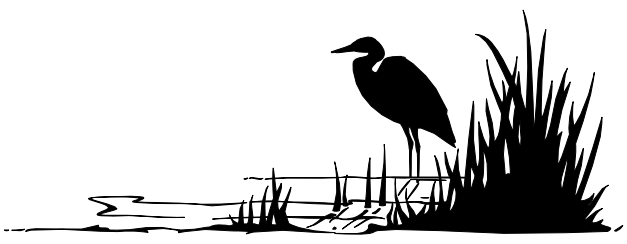


Table of Contents

This document should be cited as:

South Carolina Department of Health and Environmental Control. 2005. Watershed Water Quality Assessment: Santee River Basin. Technical Report No.013-05. Bureau of Water, Columbia, S.C.

Water Quality Assessment Summary

Santee River Basin

TERMS USED IN TABLES

AQUATIC LIFE USE SUPPORT (AL) - The degree to which aquatic life is protected is assessed by comparing important water quality characteristics and the concentrations of potentially toxic pollutants with standards. Aquatic life use support is based on the percentage of standards excursions at a sampling site.

For **dissolved oxygen** and **pH**:

If the percentage of standard excursions is 10% or less, then uses are ***fully supported***.

If the percentage of standard excursions is greater than 10% and less than or equal to 25%, then uses are ***partially supported***.

If the percentage of standard excursions is greater than 25%, uses are ***not supported*** (see p.12 for further information).

For **toxins** (heavy metals, priority pollutants, chlorine, ammonia):

If the acute aquatic life standard for any individual toxicant is not exceeded more than once, uses are ***fully supported***.

If the acute aquatic life standard is exceeded more than once (i.e. $\geq$ 2), but is less than or equal to 10% of the samples, uses are ***partially supported***.

If the acute aquatic life standard is exceeded more than once (i.e.$\geq$2), and is greater than 10% of the samples, aquatic life uses are ***not supported*** (see p.12 for further information).

For **turbidity** and waters with **numeric total phosphorus, total nitrogen, and chlorophyll-a**:

If the percentage of standard excursions is 25% or less, then uses are ***fully supported***.

If the percentage of standard excursions is greater than 25%, then uses are ***not supported*** (see p.13 for further information).

RECREATIONAL USE SUPPORT (REC) - The degree to which the swimmable goal of the Clean Water Act is attained (recreational use support) is based on the frequency of fecal coliform bacteria excursions, defined as greater than 400/100 ml for all surface water classes.

If 10% or less of the samples are greater than 400/100 ml, then recreational uses are said to be ***fully supported***.

If the percentage of standards excursions is greater than 10% and less than or equal to 25%, then recreational uses are said to be ***partially supported***.

If the percentage of standards excursions is greater than 25%, then recreational uses are said to be ***nonsupported*** (see p.14 for further information).

Excursion - The term excursion is used to describe a measurement that does not comply with the appropriate water quality standard.

Table 1. Fully Supported Sites in the Santee River Basin

***** = Station not evaluated for Recreational Support

Watershed	Waterbody Name	Station #	Improving Trends	Other Trends
03050111-010	Santee River	SC-004		
	Tavern Creek	ST-527 *		
	Surface Drainage from Safety Kleen Pinewood	SC-057		
	Lake Marion	SC-005		
		SC-039		
		RL-02306/ SC-012		
		SC-042		
		RL-01001		
		RL-01031		
		SC-040		
		SC-041		
		RL-02310		
		RL-01011/ SC-035		
		SC-021		
		CL-042/ SC-022		
		RL-01021		
		ST-024	Decreasing Total Nitrogen, Fecal Coliform	Decreasing Dissolved Oxygen

Table 1. Fully Supported Sites in the Santee River Basin

***** = Station not evaluated for Recreational Support

Watershed	Waterbody Name	Station #	Improving Trends	Other Trends
03050111-010 (continued)	Chapel Branch	SC-045		
03050111-020	Halfway Swamp Creek Tributary	C-242		
03050111-030	Jacks Creek	CW-244/ SC-013	Decreasing BOD_5, Turbidity	
03050111-040	Tawcaw Creek arm of Lake Marion	SC-017		
		SC-036		
03050111-050	Potato Creek arm of Lake Marion	SC-019		
	Wyboo Creek arm of Lake Marion	SC-023		
		ST-036/ SC-023A		
03050112-010	Santee River	SC-024		
		ST-016	Decreasing BOD_5, Total Nitrogen, Fecal Coliform	Increasing Turbidity, pH
03050112-020	Rediversion Canal	SC-037		
		ST-031/ SC-037A	Decreasing BOD_5, Total Nitrogen, Fecal Coliform	Increasing pH
03050112-030	Santee River	ST-001	Decreasing BOD_5, Total Phosphorus, Total Nitrogen, Fecal Coliform; Increasing Dissolved Oxygen	Increasing pH
03050112-060	North Santee River	ST-005	Decreasing BOD_5	Increasing pH

Table 1. Fully Supported Sites in the Santee River Basin

***** = Station not evaluated for Recreational Support

Watershed	Waterbody Name	Station #	Improving Trends	Other Trends
03050112-060 (continued)	Big Duck Creek	RO-01122		
	Santee Bay	MD-263		
	South Santee River	RO-02004		
03050201-010	Diversion Canal	CSTL-079 SC-025	Decreasing BOD_5	Decreasing Dissolved Oxygen; Increasing Turbidity
	Lake Moultrie	SC-031		
		SC-028		
		SC-027		
		RL-02328		
		RL-02322		
		ST-037/ SC-030		
		RL-02454		
		RL-01006		
		RL-01026		
		SC-046		
		SC-032		
	Duck Pond Creek	SC-034		
	Tail Race Canal	CSTL-062 SC-033	Decreasing BOD_5, Total Nitrogen, Fecal Coliform	Decreasing Dissolved Oxygen; Increasing pH
03050201-030	West Branch Cooper River	CSTL-085	Decreasing BOD_5, Increasing Dissolved Oxygen	Increasing pH

Table 1. Fully Supported Sites in the Santee River Basin

***** = Station not evaluated for Recreational Support

Watershed	Waterbody Name	Station #	Improving Trends	Other Trends
03050201-040	East Branch Cooper River	CSTL-123		
03050201-050	Cooper River	MD-152	Decreasing BOD_5, Total Nitrogen; Increasing Dissolved Oxygen	Increasing pH
		MD-043	Decreasing BOD_5, Total Phosphorus, Total Nitrogen, Fecal Coliform; Increasing Dissolved Oxygen	
		MD-044	Decreasing BOD_5, Total Nitrogen, Fecal Coliform; Increasing Dissolved Oxygen	
		MD-248	Decreasing BOD_5, Turbidity, Total Phosphorus, Total Nitrogen, Fecal Coliform; Increasing Dissolved Oxygen	Increasing pH
		MD-045	Decreasing BOD_5, Total Nitrogen, Fecal Coliform; Increasing Dissolved Oxygen	
		MD-046	Decreasing BOD_5, Total Nitrogen, Fecal Coliform; Increasing Dissolved Oxygen	
	Clouter Creek	RT-01633		
	Shipyard Creek	MD-243	Decreasing BOD_5, Turbidity, Total Phosphorus, Total Nitrogen, Fecal Coliform; Increasing Dissolved Oxygen	
	Town Creek	MD-047	Decreasing BOD_5, Total Nitrogen, Fecal Coliform; Increasing Dissolved Oxygen	
03050201-060	Durham Creek	MD-217	Decreasing BOD_5, Total Nitrogen	Increasing pH
03050201-080	Wando River	RO-02014		
		RO-01162		

Table 1. Fully Supported Sites in the Santee River Basin

***** = Station not evaluated for Recreational Support

Watershed	Waterbody Name	Station #	Improving Trends	Other Trends
		MD-264		
		MD-198	Decreasing BOD_5, Total Nitrogen, Fecal Coliform; Increasing Dissolved Oxygen	
03050202-040	Ashley River	MD-135	Decreasing BOD_5; Increasing Dissolved Oxygen	
		MD-052	Decreasing BOD_5, Total Nitrogen, Fecal Coliform; Increasing Dissolved Oxygen	Decreasing pH
03050202-050	Wappoo Creek	MD-020	Decreasing BOD_5, Total Nitrogen, Fecal Coliform; Increasing Dissolved Oxygen	Decreasing pH
03050202-060	Alligator Creek	MD-265		
	Casino Creek	MD-266		
	Five Fathom Creek	MD-267		
		RO-02008		
	Awendaw Creek	MD-268		
	Vanderhorst Creek	RT-01668		
	Sewee Bay	MD-269		
	Back Creek Tributary	RT-02004		
	Bullyard Sound	MD-270		
	Hamlin Sound	MD-271		
	Hamlin Creek	MD-272		
03050202-060 (continued)	Conch Creek	RT-02006		

Table 1. Fully Supported Sites in the Santee River Basin

***** = Station not evaluated for Recreational Support

Watershed	Waterbody Name	Station #	Improving Trends	Other Trends
03050202-070	Charleston Harbor	MD-247	Decreasing BOD_5, Total Phosphorus, Total Nitrogen, Fecal Coliform; Increasing Dissolved Oxygen	Decreasing pH
		RO-02016		
		MD-048	Decreasing BOD_5, Total Nitrogen, Fecal Coliform; Increasing Dissolved Oxygen	Decreasing pH
	Ashley River	MD-034	Decreasing BOD_5, Total Nitrogen, Fecal Coliform; Increasing Dissolved Oxygen	
	Clark Sound	RT-01644		
	Second Sister Creek	RT-02008		
	Folly Creek	MD-274		
	Folly River	MD-130		
	Stono River	RO-01144		
		MD-208	Decreasing BOD_5, Fecal Coliform	Decreasing pH
	Kiawah River	MD-273		
		MD-207	Decreasing BOD_5, Fecal Coliform	Decreasing pH

Table 2. Impaired Sites in the Santee River Basin

REC=Recreational; AL=Aquatic Life; DW= Drinking Water; PS=Partially Supported Standards; NS=Nonsupported Standards; *=Station not evaluated for Recreational Support; TD=TMDL Developed; TI=TMDL Implementation underway

Watershed	Waterbody Name	Station #	Use	Status	Water Quality Indicator	Improving Trends	Other Trends
03050111-010	Warley Creek	C-014/ SC-006	REC	NS	Fecal Coliform		
	Stream Upstream of Safety Kleen Pinewood	SC-058	AL	NS	pH		
	Lake Marion	ST-034/ RL-01002/ SC-008	AL	NS	Total Phosphorus		
		SC-044	AL	PS	pH		
		SC-010	AL	NS	Total Phosphorus		
		SC-014	AL	NS	pH, Total Phosphorus, Total Nitrogen, Chlorophyll-*a*		
		ST-025/ SC-015	AL	NS	Total Phosphorus	Decreasing BOD_5	Decreasing Dissolved Oxygen, pH
		RL-01016	AL	PS	pH		
		RL-02308/ SC-016	AL	PS	pH		
	Spring Grove Creek	ST-535/ SC-009	REC	NS	Fecal Coliform		
	Big Poplar Creek	SC-011	REC	NS	Fecal Coliform		

Table 2. Impaired Sites in the Santee River Basin

REC=Recreational; AL=Aquatic Life; DW= Drinking Water; PS=Partially Supported Standards; NS=Nonsupported Standards; *=Station not evaluated for Recreational Support; TD=TMDL Developed; TI=TMDL Implementation underway

Watershed	Waterbody Name	Station #	Use	Status	Water Quality Indicator	Improving Trends	Other Trends
03050111-020	Lake Inspiration	C-058	AL	NS	Dissolved Oxygen, pH, Turbidity, Total Phosphorus, Total Nitrogen	Decreasing BOD_5	Increasing Turbidity, Total Phosphorus
			REC	PS	Fecal Coliform		
	Halfway Swamp Creek	C-063	REC	NS	Fecal Coliform	Decreasing BOD_5	Increasing Fecal Coliform
		ST-534 *	AL	PS	Macroinvertebrates		
		C-015/ SC-007	REC	NS	Fecal Coliform		
		CW-241	REC	NS	Fecal Coliform		Increasing pH
	Lyons Creek	ST-534	AL	PS	Macroinvertebrates		
	Halfway Swamp Creek arm of Lake Marion	SC-038	AL	NS	Total Phosphorus		
03050111-030	Big Branch	CW-243/ SC-047	AL	NS	Dissolved Oxygen	Decreasing Turbidity	
			REC	NS	Fecal Coliform		
03050111-040	Tawcaw Creek	ST-018/ SC-018	AL	NS	Dissolved Oxygen		Decreasing Dissolved Oxygen; Increasing BOD_5, pH
			REC	NS	Fecal Coliform		
03050111-050	Potato Creek	ST-035/ SC-020	AL	NS	Dissolved Oxygen, pH		
			REC	PS	Fecal Coliform		

Table 2. Impaired Sites in the Santee River Basin

REC=Recreational; AL=Aquatic Life; DW= Drinking Water; PS=Partially Supported Standards; NS=Nonsupported Standards; *=Station not evaluated for Recreational Support; TD=TMDL Developed; TI=TMDL Implementation underway

Watershed	Waterbody Name	Station #	Use	Status	Water Quality Indicator	Improving Trends	Other Trends
03050111-050 (continued)	White Oak Creek	RS-01051	REC	PS	Fecal Coliform		
03050112-010	Doctor Branch	ST-537*	AL	PS	Macroinvertebrates		
	Bennetts Branch	ST-535*	AL	PS	Macroinvertebrates		
03050112-030	Echaw Creek	RS-02467	REC	NS	Fecal Coliform		
03050112-050	Wambaw Creek	CSTL-112	REC	PS	Fecal Coliform	Decreasing BOD_5	Increasing Turbidity, pH
03050112-060	Minim Creek	RT-01654	AL	NS	Turbidity		
	Cedar Creek	RS-01056	REC	NS	Fecal Coliform		
	South Santee River	ST-006	AL-Fresh water	NS	Turbidity	Decreasing BOD_5, Total Nitrogen	Increasing Turbidity, pH, Fecal Coliform
			REC	PS	Fecal Coliform		
03050201-010	Lake Moultrie Tributary	SC-043	REC	NS	Fecal Coliform		
	Lake Moultrie Tributary	SC-026	REC	NS	Fecal Coliform		
03050201-020	Walker Swamp	ST-007	REC	NS	Fecal Coliform	Decreasing BOD_5	
	Wadboo Creek	RS-02461	REC	PS	Fecal Coliform		

Table 2. Impaired Sites in the Santee River Basin

REC=Recreational; AL=Aquatic Life; DW= Drinking Water; PS=Partially Supported Standards; NS=Nonsupported Standards; *=Station not evaluated for Recreational Support; TD=TMDL Developed; TI=TMDL Implementation underway

Watershed	Waterbody Name	Station #	Use	Status	Water Quality Indicator	Improving Trends	Other Trends
		CSTL-113	REC	PS	Fecal Coliform	Decreasing BOD_5, Turbidity, Total Nitrogen, Fecal Coliform	Increasing pH
03050201-040	Turkey Creek	RS-02483	AL	NS	Dissolved Oxygen, pH		
			REC	PS	Fecal Coliform		
03050201-050	Filbin Creek	MD-249	AL	PS	Dissolved Oxygen	Decreasing BOD_5, Turbidity; Increasing Dissolved Oxygen	Increasing pH
			REC	NS	Fecal Coliform		
03050201-060	Foster Creek	MD-240	AL	NS	Dissolved Oxygen	Decreasing BOD_5, Turbidity, Total Nitrogen, Fecal Coliform	Increasing pH
	Back River Reservoir	CSTL-124	AL	NS	Copper, Dissolved Oxygen		
03050201-070	Goose Creek	MD-114	AL	NS	Dissolved Oxygen	Decreasing BOD_5, Turbidity, Total Nitrogen, Fecal Coliform	Decreasing Dissolved Oxygen; Increasing pH
			REC	PS	Fecal Coliform		
		MD-039	REC	NS	Fecal Coliform	Decreasing BOD_5, Total Nitrogen, Fecal Coliform	Increasing pH
	Goose Creek Reservoir	RL-01008	AL	PS	Dissolved Oxygen		
		ST-033	AL	NS	pH, Total Phosphorus, Chlorophyll-*a*, Copper		

Table 2. Impaired Sites in the Santee River Basin

REC=Recreational; AL=Aquatic Life; DW= Drinking Water; PS=Partially Supported Standards; NS=Nonsupported Standards; *=Station not evaluated for Recreational Support; TD=TMDL Developed; TI=TMDL Implementation underway

Watershed	Waterbody Name	Station #	Use	Status	Water Quality Indicator	Improving Trends	Other Trends
		ST-032	AL	NS	pH, Total Phosphorus, Chlorophyll-*a*	Increasing Dissolved Oxygen	Increasing pH
03050201-080	Wando River [T]	MD-115	AL	PS	Copper	Decreasing BOD_5, Total Nitrogen	Increasing Turbidity
03050202-010	Wassamassaw Swamp	CSTL-063	AL	NS	Copper	Decreasing BOD_5, Turbidity, Total Nitrogen	Increasing Fecal Coliform, pH
			REC	PS	Fecal Coliform		
	Cypress Swamp	CSTL-078	AL	NS	Zinc		
			REC	PS	Fecal Coliform		
03050202-020	Ashley River	CSTL-102	AL	NS	Dissolved Oxygen	Decreasing BOD_5, Total Nitrogen	Increasing Fecal Coliform, pH
			REC	PS	Fecal Coliform		
03050202-030	Sawmill Branch[T]	CSTL-043	AL	NS	Dissolved Oxygen	Decreasing BOD_5	Increasing pH
			REC	NS	Fecal Coliform		
	Dorchester Branch[T]	CSTL-013	AL	PS	Dissolved Oxygen	Decreasing BOD_5, Turbidity, Total Phosphorus, Total Nitrogen	Decreasing Dissolved Oxygen
			REC	NS	Fecal Coliform		
	Eagle Creek	CSTL-099	AL	NS	Turbidity	Decreasing BOD_5, Total Nitrogen	
			REC	NS	Fecal Coliform		
03050202-040	Ashley River	MD-049	AL	NS	Dissolved Oxygen, Turbidity, Copper, Nickel	Decreasing BOD_5, Total Nitrogen	

Table 2. Impaired Sites in the Santee River Basin

REC=Recreational; AL=Aquatic Life; DW= Drinking Water; PS=Partially Supported Standards; NS=Nonsupported Standards; *=Station not evaluated for Recreational Support; TD=TMDL Developed; TI=TMDL Implementation underway

Watershed	Waterbody Name	Station #	Use	Status	Water Quality Indicator	Improving Trends	Other Trends
			REC	NS	Fecal Coliform		
03050202-040 (continued)	Church Creek	MD-246	REC	PS	Fecal Coliform	Decreasing BOD_5, Turbidity, Total Nitrogen, Fecal Coliform; Increasing Dissolved Oxygen	Increasing pH
03050202-050	Log Bridge Creek	MD-121	REC	PS	Fecal Coliform	Decreasing BOD_5	Increasing Turbidity, pH
	Stono River	MD-202	AL	NS	Dissolved Oxygen, Copper	Decreasing BOD_5, Total Nitrogen; Increasing Dissolved Oxygen	Increasing Total Phosphorus
	Elliot Cut	MD-025	AL	PS	Dissolved Oxygen	Decreasing BOD_5, Turbidity, Fecal Coliform	
03050202-060	Devils Den Creek	RT-02016	AL	NS	Copper		
	Jeremy Creek	MD-203	AL	NS	Dissolved Oxygen, Turbidity		Increasing Turbidity
			REC	PS	Fecal Coliform		
	Matthews Creek Tributary	RT-01623	AL	NS	Turbidity		
	Awendaw Creek	MD-250	REC	NS	Fecal Coliform		
	Atlantic Intracoastal Waterway	MD-269	AL	NS	Copper	Decreasing BOD_5, Total Phosphorus, Total Nitrogen, Fecal Coliform	Decreasing pH
03050202-070	Shem Creek	MD-071	AL	NS	Copper	Decreasing BOD_5, Turbidity, Total Nitrogen	
			REC	PS	Fecal Coliform		

Table 2. Impaired Sites in the Santee River Basin

REC=Recreational; AL=Aquatic Life; DW= Drinking Water; PS=Partially Supported Standards; NS=Nonsupported Standards; *=Station not evaluated for Recreational Support; TD=TMDL Developed; TI=TMDL Implementation underway

Watershed	Waterbody Name	Station #	Use	Status	Water Quality Indicator	Improving Trends	Other Trends
03050202-070 (continued)	Charleston Harbor	MD-165	AL	NS	Copper	Decreasing BOD_5, Total Nitrogen, Fecal Coliform; Increasing Dissolved Oxygen	Decreasing pH
	Stono River	MD-026	AL	NS	Dissolved Oxygen, Copper	Decreasing BOD_5, Total Nitrogen, Fecal Coliform	
		MD-206	AL	PS	Dissolved Oxygen	Decreasing BOD_5	Decreasing pH
	Stono Inlet Tributary	RT-01642	AL	NS	Turbidity		

Table 3. Changes in Use Support Status

Santee River Basin Sites that Improved from 1998 to 2002

REC= Recreational; AL=Aquatic Life; FS=Fully Supported Standards; PS=Partially Supported Standards; NS=Nonsupported Standards

Watershed	Waterbody Name	Station #	Use	Status		Water Quality Indicator	
				1998	2002	1998	2002
03050111-010	Lake Marion	ST-024	AL	NS	FS	Zinc	
03050111-020	Halfway Swamp Creek Tributary	CW-242	AL	--	FS	Inconclusive	
			REC	PS	FS	Fecal Coliform	
03050111-030	Jacks Creek	CW-244/ SC-013	REC	PS	FS	Fecal Coliform	
03050201-010	Duck Pond Creek	SC-034	REC	PS	FS	Fecal Coliform	
	Tail Race Canal	CSTL-062 SC-033	AL	PS	FS	pH	
03050201-020	Wadboo Creek	CSTL-113	REC	NS	PS	Fecal Coliform	Fecal Coliform
03050201-030	West Branch Cooper River	CSTL-085	REC	PS	FS	Fecal Coliform	
03050201-050	Shipyard Creek	MD-243	AL	NS	FS	Sediment Contamination and Shellfish Consumption Ban	
03050201-060	Foster Creek	MD-240	REC	PS	FS	Fecal Coliform	
03050202-040	Ashley River	MD-052	AL	PS	FS	Dissolved Oxygen	
	Church Creek	MD-246	AL	PS	FS	Dissolved Oxygen	
			REC	NS	PS	Fecal Coliform	Fecal Coliform
03050202-050	Log Bridge Creek	MD-121	REC	NS	PS	Fecal Coliform	Fecal Coliform
	Stono River	MD-202	REC	PS	FS	Fecal Coliform	
	Elliot Cut	MD-025	AL	NS	PS	Dissolved Oxygen	Dissolved Oxygen
			REC	PS	FS	Fecal Coliform	
03050202-070	Shem Creek	MD-071	REC	NS	PS	Fecal Coliform	Fecal Coliform
	Stono River	MD-206	AL	NS	PS	Dissolved Oxygen	Dissolved Oxygen

Table 4. Changes in Use Support Status

Santee River Basin Sites that Degraded from 1998 to 2002

REC= Recreational; AL=Aquatic Life; FS=Fully Supported Standards; PS=Partially Supported Standards; NS=Nonsupported Standards

Watershed	Waterbody Name	Station #	Use	Status		Water Quality Indicator	
				1998	2002	1998	2002
03050111-010	Warley Creek	SC-006	REC	PS	NS	Fecal Coliform	Fecal Coliform
	Lake Marion	SC-008	AL	FS	NS		Total Phosphorus
		SC-044	AL	FS	PS		pH
		SC-010	AL	FS	NS		Total Phosphorus
		SC-014	AL	FS	NS		pH, Total Phosphorus, Total Nitrogen, Chlorophyll-*a*
		SC-016	AL	FS	PS		pH
	Spring Grove Creek	SC-009	REC	PS	NS	Fecal Coliform	Fecal Coliform
	Big Poplar Creek	SC-011	REC	FS	NS		Fecal Coliform
03050111-020	Lake Inspiration	C-058	AL	PS	NS	Dissolved Oxygen, pH	Dissolved Oxygen, pH, Turbidity, Total Phosphorus, Total Nitrogen
	Halfway Swamp Creek arm of Lake Marion	SC-038	AL	FS	NS		Total Phosphorus
03050111-030	Big Branch	CW-243/ SC-047	AL	FS	NS		Dissolved Oxygen
			REC	PS	NS	Fecal Coliform	Fecal Coliform
03050111-040	Potato Creek	SC-020	AL	FS	NS		Dissolved Oxygen , pH
03050112-050	Wambaw Creek	CSTL-112	REC	FS	PS		Fecal Coliform
03050112-060	South Santee River	ST-006	AL	FS	NS		Turbidity
			REC	FS	PS		Fecal Coliform
03050201-010	Lake Moultrie Tributary	SC-043	REC	PS	NS	Fecal Coliform	Fecal Coliform
03050201-050	Filbin Creek	MD-249	AL	FS	PS		Dissolved Oxygen
03050201-070	Goose Creek Reservoir	ST-033	AL	--	NS	Inconclusive	pH, Total Phosphorus, Chlorophyll-*a*, Copper

Santee River Basin Sites that Degraded from 1998 to 2002

REC= Recreational; AL=Aquatic Life; FS=Fully Supported Standards; PS=Partially Supported Standards; NS=Nonsupported Standards

Watershed	Waterbody Name	Station #	Use	Status		Water Quality Indicator	
				1998	2002	1998	2002
03050201-070 (continued)	Goose Creek Reservoir	ST-032	AL	PS	NS	Dissolved Oxygen	pH, Total Phosphorus, Chlorophyll-*a*
03050202-010	Wassamassaw Swamp	CSTL-063	AL	FS	NS		Copper
	Cypress Swamp	CSTL-078	AL	FS	NS		Zinc
03050202-030	Eagle Creek	CSTL-099	AL	FS	NS		Turbidity
03050202-050	Stono River	MD-202	AL	PS	NS	Dissolved Oxygen	Dissolved Oxygen, Copper
03050202-060	Jeremy Creek	MD-203	AL	FS	NS		Dissolved Oxygen, Turbidity
	Awendaw Creek	MD-250	REC	PS	NS	Fecal Coliform	Fecal Coliform
	Atlantic Intracoastal Waterway	MD-069	AL	FS	NS		Copper
03050202-070	Shem Creek	MD-071	AL	PS	NS	Dissolved Oxygen	Copper
	Charleston Harbor	MD-165	AL	FS	NS		Copper
	Stono River	MD-026	AL	PS	NS	Dissolved Oxygen	Dissolved Oxygen, Copper

Introduction

The South Carolina Department of Health and Environmental Control (SCDHEC or the Department) initiated its first watershed planning activities as a result of a U.S. Environmental Protection Agency (USEPA) grant in June of 1972. These activities were soon extended by requirements for a Continuing Planning Process under §303(e), "Federal Water Pollution Control Act Amendments of 1972", U.S. Public Law 92-500. In 1975, the SCDHEC published basin-planning reports for the four major basins in South Carolina. A related planning activity resulted from §208 of the Federal Water Pollution Control Act, which required states to prepare planning documents on an areawide basis. Areawide plans were completed in the late 1970's for the five designated areas of the State and for the nondesignated remainder of the State. The updated versions serve as information sources and guides for water quality management. The Continuing Planning Process, watershed assessments, and 208 plans are elements of South Carolina's overall water quality management plan.

The Bureau of Water emphasizes watershed planning to better coordinate river basin planning and water quality management. Watershed-based management allows the Department to address Congressional and Legislative mandates in a coordinated manner and to better utilize current resources. The watershed approach also improves communication between the Department, the regulated community, and the public on existing and future water quality issues.

Purpose of the Watershed Water Quality Assessment

A watershed is a geographic area into which the surrounding waters, sediments, and dissolved materials drain, and whose boundaries extend along surrounding topographic ridges. Watershed-based water quality management recognizes the interdependence of water quality related activities associated with a drainage basin including: monitoring, problem identification and prioritization, water quality modeling, planning, permitting, and other activities. The Bureau of Water's watershed approach integrates these and other activities by watershed, resulting in appropriately focused water quality protection efforts. While an important aspect of the program is water quality problem identification and solution, the emphasis is on problem prevention.

The Department has divided the State into five regions (areas consisting of one or more river basins), along hydrologic lines, which contain approximately the same number of NPDES permitted dischargers. A Watershed Water Quality Assessment (WWQA) will be created for each major river basin within the five regions and will be updated on a five-year rotational basis. This will allow for effective allocation and coordination of water quality activities and efficient use of available resources. The Departments Santee River Basin includes the Santee River Basin and the Cooper River and Ashley River Basin. The Santee River Bain is subdivided into 11 watersheds or hydrologic units within South Carolina and includes the Santee River as it flows through Lake Marion, the Rediversion Canal and out to the Atlantic Ocean via the South Santee River and the North Santee River. The Cooper River/Ashley River Basin is subdivided into 15 watersheds or hydrologic units within South Carolina and includes the Cooper River as it flows from Lake Moultrie to the Charleston Harbor and its major tributaries, which include the Back River and the Wando River. It also includes the Ashley River and the Stono River, which drain into the Charleston Harbor.

The hydrologic units used are from the 1999 USGS Hydrologic Unit Code for South Carolina. In an effort to make these units more representative of actual hydrology, SCDHEC has proposed changes to the 1999 map affecting some boundaries in the Santee River Basin. These changes have been provisionally approved by USGS pending a future statewide update. All water quality related evaluations are made at the 11-digit watershed level. The stream names used are derived from USGS topographic maps. The National Hydrography Dataset (NHD) was the system used in the development of the digital hydrography and stream length estimates. NHD is based on the content of the USGS 1:100,000 scale Digital Line Graph (DLG) hydrography data, integrated with reach (stream) related information from the USEPA Reach File Version 3.0 (RF3) data. Based on the blue line streams of the USGS topo maps, it is likely that portions of the stream network in terms of perennial, intermittent, and ephemeral streams are not represented.

The watershed-based assessments fulfill a number of USEPA reporting requirements including various activities under §303(d), §305(b), §314, and §319 of the Clean Water Act (CWA). Section 303(d) requires a listing of waters located within a watershed that do not meet applicable water quality standards. Section 305(b) requires that the State biennially submit a report that includes a water quality description and analysis of all navigable waters to estimate environmental impacts. Section 314 requires that the State submit a biennial report that identifies, classifies, describes, and assesses the status and trends in water quality of publicly owned lakes. The watershed plan is also a logical evaluation, prioritization, and implementation tool for nonpoint source (§319) requirements. Nonpoint source best management practices (BMPs) can be selected by identifying water quality impairments and necessary controls, while considering all the activities occurring in the drainage basin.

The assessment also allows for more efficient issuance of National Pollutant Discharge Elimination System (NPDES) and State wastewater discharge permits. Proposed permit issuances within a watershed may be consolidated and presented to the public in groups, rather than one at a time, allowing the Department to realize a resource savings and the public to realize an information advantage.

The Watershed Water Quality Assessment (WWQA) is a geographically based document that describes, at the watershed level, water quality related activities that may potentially have an adverse impact on water quality. The Watershed Implementation Staff investigates the impaired streams mentioned in the WWQA to determine, where possible, the source of the impairment and recommends solutions to correct the problems. As part of this effort, the watershed staff is forging partnerships with various federal and state agencies, local governments, and community groups. In particular, the Department's Watershed Program and the NRCS (Natural Resources Conservation Service) district offices are working together to address some of the nonpoint source (NPS) concerns in the basin. By combining NRCS's local knowledge of land use and the Department's knowledge of water quality, we are able to build upon NRCS's close relationships with landowners and determine where NPS projects are needed. These projects may include educational campaigns or special water quality studies.

Factors Assessed in Watershed Evaluations

Surface Water Quality

SCDHEC's Bureau of Water and Bureau of Environmental Services ensure that the water in South Carolina is safe for drinking and recreation, and that it is suitable to support and maintain aquatic flora and fauna. Functions include planning, permitting, compliance assurance, enforcement, and monitoring. This section provides an overview of water quality evaluation and protection activities.

Monitoring

In an effort to evaluate the State's water quality, the Department operates and collects data from a statewide network of ambient monitoring sites. The ambient monitoring network is directed toward determining long-term water quality trends, assessing attainment of water quality standards, identifying locations in need of additional attention, and providing background data for planning and evaluating stream classifications and standards.

Ambient monitoring data are also used in the process of formulating permit limits for wastewater discharges with the goal of maintaining State and Federal water quality standards and criteria in the receiving streams in accordance with the goals of the Clean Water Act. These standards and criteria define the instream chemical concentrations that provide for protection and reproduction of aquatic flora and fauna, help determine support of the classified uses of each waterbody, and serve as instream limits for the regulation of wastewater discharges or other activities. In addition, by comparing the ambient monitoring network data to the State Water Quality Standards, these data are used in the preparation of the biennial §305(b) report to Congress, which provides a general summary of statewide water quality, and the §303(d) list of impaired waters with respect to attainment of classified uses.

Extensive revisions to SCDHEC's ambient water quality monitoring network were implemented in 2001. One of the primary purposes of the changes was to establish a network of permanent sites with a greater focus on watersheds. Another goal was to establish a more consistent sampling frequency and parameter coverage at the permanent sites. Thus while most of the previous sampling locations were maintained, the sampling frequency and parameter coverage at each may have changed. The previous monitoring design was comprised of four main station types: primary (P), secondary (S), watershed (W), and biological (BIO) stations. The new station types include: Integrator (INT), Special Purpose (SPRP), Summer-Only (SUMM), Sediment-Only (SEDM), Random Stream for year ## (RS##), Random Lake for year ## (RL##), Random Tide Creek for year ## (RT##), or Random Open Water for year ## (RO##). The station descriptions depicting any transition in station types and/or coverage during the study period are located in each watershed evaluation.

Primary stations are sampled on a monthly basis year round. The static primary station network is operated statewide, and receives the most extensive parameter coverage, thus making it best suited for detecting long-term trends. Integrator Sites are the approximate equivalent under the new design. Integrator Sites target the furthest downstream access of each of the 11-digit watershed units in the state, as well as the major waterbodies that occur within these watershed units. Special Purpose Sites are also

permanent, fixed-location sites, but represent locations of special interest to the Department that do not meet the location criteria of Integrator Sites.

Secondary stations are sampled monthly from May through October, a period critical to aquatic life, and characterized by higher water temperatures and lower flows. Secondary stations are located in areas where specific monitoring is warranted due to point source discharges, or in areas with a history of water quality problems. Secondary station parameter coverage is less extensive and more flexible than primary or watershed station coverages. The number and locations of secondary stations have greater annual variability than do those in the primary station network, and during a basin's target year may have parameter coverage and sampling frequency duplicating that of primary or watershed stations. Summer-Only Sites are the equivalent under the new design. There are very few Summer-Only Sites as they are intended to track specific reservoir eutrophication concerns.

Watershed stations are sampled on a monthly basis, year round, during a basin's target year. Additional watershed stations may be sampled monthly from May through October to augment the secondary station network. Watershed stations are located to provide more complete and representative coverage within the larger drainage basin, and to identify additional monitoring needs. Watershed stations have the same parameter coverage as primary stations. Under the new design, Watershed stations are locations with extensive historic monitoring data (e.g. primary or secondary monitoring sites under the previous design). Changes in water quality can be identified by comparison of the new data to the historic data.

A statewide Probability-Based, or random sampling, component is part of the new monitoring design. A probability-based monitoring design is a type of a survey design in which the population of interest is sampled in a fashion that allows statements to be made about the whole population based on a subsample, and produces an estimate of the accuracy of the assessment results. The advantage of the probability-based sampling design is that statistically valid statements about water quality can be made about large areas based on a relatively small subsample. Separate monitoring schemes have been developed for stream, lake/reservoir, and estuarine resources. Each year a new statewide set of probability-based random sites is selected for each waterbody type. Random Sites are sampled on a monthly basis for one year with the same parameter coverage as Integrator Sites. The data from those Random Sites located within this basin are included in this assessment.

Ambient biological trend monitoring is conducted to collect data to indicate general biological conditions of State waters that may be subject to a variety of point and nonpoint source impacts. Ambient biological sampling is also used to establish regional reference or "least impacted" sites from which to make comparisons in future monitoring. Additionally, special macroinvertebrate studies, in which stream specific comparisons among stations located upstream and downstream from a known discharge or nonpoint source area, are used to assess impact.

Qualitative sampling of macroinvertebrate communities is the primary bioassessment technique used in ambient biological trend monitoring. A habitat assessment of general stream habitat availability and a substrate characterization is conducted at each site. Annual ambient biological monitoring is conducted during low flow "worst case" conditions in July - September. Some coastal plain streams that have no flow conditions in the summer months may be sampled in the winter (January-March). This

technique may also be used in special studies for the purpose of determining if, and to what extent, a wastewater discharge or nonpoint source runoff is impacting the receiving stream. A minimum of two sample locations, one upstream and one downstream from a discharge or runoff area, is collected. At least one downstream recovery station is also established when appropriate. Sampling methodology follows procedures described in Standard Operating Procedures, Biological Monitoring. Only sites described as 'BIO' will collect information on the macroinvertebrate communities used in the ambient biological trend monitoring.

Many pollutants may be components of point source discharges, but may be discharged in a discontinuous manner, or at such low concentrations that water column sampling for them is impractical. Some pollutants are also common in nonpoint source runoff, reaching waterways only after a heavy rainfall; therefore, in these situations, the best media for the detection of these chemicals are sediment and fish tissue where they may accumulate over time. Their impact may also affect the macroinvertebrate community.

Aquatic sediments represent a historical record of chronic conditions existing in the water column, and sediment samples are analyzed at selected monitoring sites. Pollutants bind to particulate organic matter in the water column and settle to the bottom where they become part of the sediment "record". Accumulated sediments not only reflect the impact of point source discharges, but also incorporate nonpoint source pollution washed into the stream during rain events. As a result, contaminant concentrations originating from irregular and highly variable sources are recorded in the sediment. The sediment concentrations at a particular location do not vary as rapidly with time as do the water column concentrations. Thus, the sediment record may be read at a later time, unrelated to the actual release time. Lakes act as settling basins for materials entering the lake system directly from a discharge or indirectly from the land surface washed into streams. Therefore, it is not unusual for lake sediment concentrations to be higher than sediment concentrations found in streams.

The ambient monitoring program has the capability of sampling a wide range of media and analyzing them for the presence or effects of contaminants. Ambient monitoring data from 79 stations were reviewed for the Santee River Basin, 49 from the Cooper River Basin, and 50 for the Ashley River Basin.

Natural Swimming Areas

Although all waters of the State are protected for swimming, some areas are more popular than others and may require closer monitoring. Currently monitored areas are located and discussed in the appropriate watershed evaluations.

Classified Waters, Standards, and Natural Conditions

The waters of the State have been classified in regulation based on the desired uses of each waterbody. State standards for various parameters have been established to protect all uses within each classification. The water-use classifications that apply to this basin are as follows.

Class ORW, or "outstanding resource waters", are freshwaters or saltwaters that constitute an outstanding recreational or ecological resource, or those freshwaters suitable as a source for drinking water supply purposes, with treatment levels specified by the Department.

Class A were freshwaters that were suitable for primary contact recreation. This class was also suitable for uses listed as Class B. As of April 1992, Class A and Class B waters were reclassified as Class FW, which protects for primary contact recreation.

Class B were freshwaters that were suitable for secondary contact recreation and as a source for drinking water supply, after conventional treatment, in accordance with the requirements of the Department. These waters were suitable for fishing, and the survival and propagation of a balanced indigenous aquatic community of fauna and flora. This class was also suitable for industrial and agricultural uses. The main difference between the Class A and B freshwater was the fecal coliform standard. Class A waters were not to exceed a geometric mean of 200/100ml, based on 5 consecutive samples during any 30 day period; nor were more than 10% of the total samples during any 30 day period to exceed 400/100ml. Class B waters were not to exceed a geometric mean of 1000/100ml, based on 5 consecutive samples during any 30 day period; nor were more than 20% of the total samples during any 30 day period to exceed 2000/100ml. As of April 1992, Class A and Class B waters were reclassified as Class FW, which protects for primary contact recreation.

Class FW, or "freshwaters", are freshwaters that are suitable for primary and secondary contact recreation and as a source for drinking water supply, after conventional treatment, in accordance with the requirements of the Department. These waters are suitable for fishing, and the survival and propagation of a balanced indigenous aquatic community of fauna and flora. This class is also suitable for industrial and agricultural uses.

Class SFH, or "shellfish harvesting" waters, are tidal saltwaters protected for shellfish harvesting, and are suitable also for uses listed in Classes SA and SB.

Class SA comprises "tidal saltwaters" suitable for primary and secondary contact recreation, crabbing and fishing. These waters are not protected for harvesting of clams, mussels, or oysters for market purposes or human consumption. The waters are suitable for the survival and propagation of a balanced indigenous aquatic community of marine fauna and flora.

Class SB are "tidal saltwaters" suitable for the same uses listed in SA. The difference between the Class SA and SB saltwater concerns the DO limitations. Class SA waters must maintain daily DO averages not less than 5.0 mg/l, with a minimum of 4.0 mg/l, and Class SB waters maintain DO levels not less than 4.0 mg/l.

Class GB, or "groundwaters", include all groundwaters of the State, unless classified otherwise, which meet the definition of underground sources of drinking water.

Site specific numeric standards (*) for surface waters may be established by the Department to replace the numeric standards found in Regulation 61-68 or to add new standards not contained in R.61-68. Establishment of such standards shall be subject to public participation and administrative procedures for adopting regulations. In addition, such site specific numeric standards shall not apply to tributary or downstream waters unless specifically described in the water classification listing in R.61-69.

The standards are used as instream water quality goals to maintain and improve water quality and also serve as the foundation of the Bureau of Water's program. They are used to determine permit limits for treated wastewater dischargers and any other activities that may impact water quality. Using mathematical Wasteload Allocation Models, the impact of a wastewater discharge on a receiving stream is predicted under critical conditions following R.61-68. These predictions are then used to set limits for different pollutants on the National Pollutant Discharge Elimination System (NPDES) permits issued by

the Department. The NPDES permit limits are set so that, as long as a permittee (wastewater discharger) meets the established permit limits, the discharge should not cause a standards violation in the receiving stream. All discharges to the waters of the State are required to have an NPDES permit and must abide by those limits, under penalty of law.

Classifications are based on desired uses, not on natural or existing water quality, and are a legal means to obtain the necessary treatment of discharged wastewater to protect designated uses. Actual water quality may not have a bearing on a waterbody's classification. A waterbody may be reclassified if desired or existing public uses justify the reclassification and the water quality necessary to protect these uses is attainable. A classification change is an amendment to a State regulation and requires public participation, SCDHEC Board approval, and General Assembly approval.

Natural conditions may prevent a waterbody from meeting the water quality goals as set forth in the standards. The fact that a waterbody does not meet the specified numeric standards for a particular classification does not mean the waterbody is polluted or of poor quality. Certain types of waterbodies (i.e. swamps, lakes, tidal creeks) may naturally have water quality lower than the numeric standards. A waterbody can have water quality conditions below standards due to natural causes and still meet its use classification. A site specific numeric standard may be established by the Department after being subjected to public participation and administrative procedures for adopting regulations. Site specific numeric standards apply only to the stream segment described in the water classification listing, not to tributaries or downstream unspecified waters.

Water Quality Indicators

Water quality data are used to describe the condition of a waterbody, to help understand why that condition exists, and to provide some clues as to how it may be improved. Water quality indicators include physical, chemical, and biological measurements. Copies of the Standard Operating Procedures used for these measurements are available from the Department's Bureau of Water and the Bureau of Environmental Services. The current State of S.C. Monitoring Strategy is available on our website at www.scdhec.gov/eqc/admin/html/eqcpubs.html#wqreports and describes what parameters are sampled, where they are sampled, and how frequently.

MACROINVERTEBRATE COMMUNITY

Macroinvertebrates are aquatic insects and other aquatic invertebrates associated with the substrates of waterbodies (including, but not limited to, streams, rivers, tidal creeks, and estuaries). Macroinvertebrates can be useful indicators of water quality because these communities respond to integrated stresses over time that reflect fluctuating environmental conditions. Community responses to various pollutants (e.g. organic, toxic, and sediment) may be assessed through interpretation of diversity, known organism tolerances, and in some cases, relative abundances and feeding types.

FISH TISSUE

Many pollutants occur in such low concentrations in the water column that they are usually below analytical detection limits. Over time many of these chemicals may accumulate in fish tissue to levels

that are easily measured. By analyzing fish tissue it is possible to see what pollutants may be present in waterbodies at very low levels. This information can also be used to determine if consumption of the fish poses any undue human health concerns and to calculate consumption rates that are safe.

DISSOLVED OXYGEN

Oxygen is essential for the survival and propagation of aquatic organisms. If the amount of oxygen dissolved in water falls below the minimum requirements for survival, aquatic organisms or their eggs and larvae may die. A severe example is a fish kill. Dissolved oxygen (DO) varies greatly due to natural phenomena, resulting in daily and seasonal cycles. Different forms of pollution also can cause declines in DO.

Changes in DO levels can result from temperature changes or the activity of plants and other organisms present in a waterbody. The natural diurnal (daily) cycle of DO concentration is well documented. Dissolved oxygen concentrations are generally lowest in the morning, climbing throughout the day due to photosynthesis and peaking near dusk, then steadily declining during the hours of darkness.

There is also a seasonal DO cycle in which concentrations are greater in the colder, winter months and lower in the warmer, summer months. Streamflow (in freshwater) is generally lower during the summer and fall, and greatly affects flushing, reaeration, and the extent of saltwater intrusion, all of which affect dissolved oxygen values.

BIOCHEMICAL OXYGEN DEMAND

Five-day biochemical oxygen demand (BOD_5) is a measure of the amount of dissolved oxygen consumed by the decomposition of carbonaceous and nitrogenous matter in water over a five-day period. The BOD_5 test indicates the amount of biologically oxidizable carbon and nitrogen that is present in wastewater or in natural water. Matter containing carbon or nitrogen uses dissolved oxygen from the water as it decomposes, which can result in a dissolved oxygen decline. The quantity of BOD_5 discharged by point sources is limited through the National Pollutant Discharge Elimination System (NPDES) permits issued by the Department. The discharge of BOD_5 from a point source is restricted by the permits so as to maintain the applicable dissolved oxygen standard.

PH

pH is a measure of the hydrogen ion concentration of water, and is used to indicate degree of acidity. The pH scale ranges from 0 to 14 standard units (SU). A pH of 7 is considered neutral, with values less than 7 being acidic, and values greater than 7 being basic.

Low pH values are found in natural waters rich in dissolved organic matter, especially in Coastal Plain swamps and black water rivers. The tannic acid released from the decomposition of vegetation causes the tea coloration of the water and low pH. High pH values in lakes during warmer months are associated with high phytoplankton (algae) densities. The relationship between phytoplankton and daily pH cycles is well established. Photosynthesis by phytoplankton consumes carbon dioxide during the day,

which results in a rise in pH. In the dark, phytoplankton respiration releases carbon dioxide. In productive lakes, carbon dioxide decreases to very low levels, causing the pH to rise to 9-10 SU.

FECAL COLIFORM BACTERIA

Fecal coliform bacteria are present in the digestive tract and feces of all warm-blooded animals, including humans, poultry, livestock, and wild animal species. Fecal coliform bacteria are themselves generally not harmful, but their presence indicates that surface waters may contain pathogenic microbes. Diseases that can be transmitted to humans through water contaminated by improperly treated human or animal waste are the primary concern. At present, it is difficult to distinguish between waters contaminated by animal waste and those contaminated by human waste.

Public health studies have established correlations between fecal coliform numbers in recreational and drinking waters and the risk of adverse health effects. Based on these relationships, the USEPA and SCDHEC have developed enforceable standards for surface waters to protect against adverse health effects from various recreational or drinking water uses. Proper waste disposal or sewage treatment prior to discharge to surface waters minimizes this type of pollution.

NUTRIENTS

Oxygen demanding materials and plant nutrients are common substances discharged to the environment by man's activities, through wastewater facilities and by agricultural, residential, and stormwater runoff. The most important plant nutrients, in terms of water quality, are phosphorus and nitrogen. In general, increasing nutrient concentrations are undesirable due to the potential for accelerated growth of aquatic plants, including algae.

The forms of nitrogen routinely analyzed at SCDHEC stations are ammonia and ammonium nitrogen (NH_3/NH_4), total Kjeldahl nitrogen (TKN), and nitrite and nitrate nitrogen (NO_2/NO_3). Ammonia and ammonium are readily used by plants. TKN is a measure of organic nitrogen and ammonia in a sample. Nitrate is the product of aerobic transformation of ammonia, and is the most common form used by aquatic plants. Nitrite is usually not present in significant amounts. Total nitrogen is the sum of TKN and NO_2/NO_3.

Total phosphorus (TP) is commonly measured to determine phosphorus concentrations in surface waters. TP includes all of the various forms of phosphorus (organic, inorganic, dissolved, and particulate) present in a sample.

CHLOROPHYLL *a*

Nuisance plant growth can create imbalances in the aquatic community, as well as aesthetic and access issues. Invasive growth of rooted aquatic vegetation can clog boat motors and create disagreeable conditions for swimming and water skiing. High densities of microscopic algae (phytoplankton) can cause wide fluctuations in pH and dissolved oxygen, and can cause undesirable shifts in the composition of aquatic life, or even fish kills. Chlorophyll *a* is a dominant photosynthetic pigment in plants and is used as an indicator of the density of phytoplankton in the water column. The process of cultural eutrophication, from increased plant nutrients, is particularly noticeable in lakes. Continuous flushing in

streams prevents the development of significant phytoplankton populations and the resultant chemical changes in water quality.

TURBIDITY

Turbidity is an expression of the scattering and absorption of light through water. The presence of clay, silt, fine organic and inorganic matter, soluble colored organic compounds, and plankton and other microscopic organisms increases turbidity. Increasing turbidity can be an indication of increased runoff from land. It is an important consideration for drinking water as finished water has turbidity limits.

TOTAL SUSPENDED SOLIDS

Total Suspended Solids (TSS) are the suspended organic and inorganic particulate matter in water. Although increasing TSS can also be an indication of increased runoff from land, TSS differs from turbidity in that it is a measure of the mass of material in, rather than light transmittance through, a water sample. High TSS can adversely impact fish and fish food populations and damage invertebrate populations. There are no explicit State standards for TSS.

HEAVY METALS

Concentrations of cadmium, chromium, copper, lead, mercury, and nickel in water are routinely measured by the Department to compare to State standards intended to protect aquatic life and human health. These metals occur naturally in the environment, and many are essential trace elements for plants and animals. Human activities, such as land use changes and industrial and agricultural processes have resulted in an increased flux of metals from land to water. Atmospheric inputs are also recognized as important sources of metals to aquatic systems. Metals are released to the atmosphere from the burning of fossil fuels (coal, oil, gasoline), wastes (medical, industrial, municipal), and organic materials. The metals are then deposited on land and in waterways from the atmosphere via rainfall and attached to particulates (dry deposition).

Assessment Methodology

The Watershed Water Quality Assessment is a geographically-based document that describes, at the watershed level, water quality as well as conditions and activities related to water quality. Significant revisions to South Carolina's Water Quality Standards were effective on June 22, 2001. USEPA approved these standards for use in implementing the Clean Water Act on November 28, 2001. This section provides an explanation of the information assessment methodology used to generate the watershed-level summaries. Water quality data summaries used in this assessment are presented in Appendices A and B.

USE SUPPORT DETERMINATION

Physical, chemical and biological data were evaluated, as described below, to determine if water quality met the water quality criteria established to protect the State classified uses defined in S.C.

Regulation 61-68, *Water Classifications and Standards*. Some waters may exhibit characteristics outside the appropriate criteria due to natural conditions. Such natural conditions do not constitute a violation of the water quality criteria. To determine the appropriate classified uses and water quality criteria for specific waterbodies and locations, refer to S.C. Regulation 61-69, *Classified Waters*, in conjunction with S.C. Regulation 61-68.

At the majority of SCDHEC's surface water monitoring stations, samples for analysis are collected as surface grabs once per month, quarter, or year, depending on the parameter. Grab samples collected at a depth of 0.3 meters are considered to be a surface measurement. At most stations sampled by boat, dissolved oxygen and temperature are sampled as a water column profile, with measurements being made at a depth of 0.3 meters below the water surface and at one-meter intervals to the bottom or at 0.3 meters, mid-depth, and bottom. At stations sampled from bridges, these parameters are measured only at a depth of 0.3 meters. For the purpose of assessment, only surface samples are used in standards comparisons and trend assessments. Because of the inability to target individual high or low flow events on a statewide basis these data are considered to represent typical physical conditions and chemical concentrations in the waterbodies sampled. All water and sediment samples are collected and analyzed according to standard procedures (SCDHEC 1997, 2001).

Results from water quality samples can be compared to State and USEPA criteria, with some restrictions due to time of collection and sampling frequency. For certain parameters, the monthly sampling frequency employed in the ambient monitoring network is insufficient for strict interpretation of the standards. The USEPA does not define the sampling method or frequency other than indicating that it should be "representative". The grab sample method is considered to be representative for the purpose of indicating excursions relative to criteria, within certain considerations. A single grab sample is more representative of a one-hour average than a four-day average, more representative of a one-day average than a one-month average, and so on; thus, when inferences are drawn from grab samples relative to criteria, sampling frequency and the intent of the criteria must be weighed. When the sampling method or frequency does not agree with the intent of the particular criterion, any conclusion about water quality should be considered as only an indication of conditions, not as a proven circumstance.

Macroinvertebrate community structure is analyzed routinely, at selected stations, as a means of detecting adverse biological impacts on the aquatic fauna of the state's waters due to water quality conditions that may not be readily detectable in the water column chemistry.

This water quality assessment is based on the last complete five years of available quality assured physical, chemical, and biological data (1997 - 2001). Because of the data quality assurance and quality control process outcome, only total phosphorus data collected from 1996 through June 1998 were included in this assessment.

AQUATIC LIFE USE SUPPORT

One important goal of the Clean Water Act, the South Carolina Pollution Control Act, and the State Water Quality Classifications and Standards is to maintain the quality of surface waters to provide

for the survival and propagation of a balanced indigenous aquatic community of fauna and flora. The degree to which aquatic life is protected (Aquatic Life Use Support) is assessed by comparing important water quality characteristics and the concentrations of potentially toxic pollutants with numeric criteria.

Support of aquatic life uses is determined based on the percentage of numeric criteria excursions and, where data are available, the composition and functional integrity of the biological community. The term excursion is used to describe a measured pollutant concentration that is outside of the acceptable range as defined by the appropriate criterion. Some waters may exhibit characteristics outside the appropriate criteria due to natural conditions. Such natural conditions do not constitute a violation of the water quality criteria. A number of waterbodies have been given waterbody-specific criteria for pH and dissolved oxygen, which reflect natural conditions. To determine the appropriate numeric criteria and classified uses for specific waterbodies and locations, please refer to S.C. Regulation 61-68, *Water Classifications and Standards* and S.C. Regulation 61-69, *Classified Waters*.

If the appropriate criterion for **dissolved oxygen and pH** are contravened in 10 percent or less of the samples, the criterion is said to be fully supported. If the percentage of criterion excursions is greater than 10 percent, but less than or equal to 25 percent, the criterion is partially supported, unless excursions are due to natural conditions. If there are more than 25 percent excursions, the criterion is not supported, unless excursions are due to natural conditions. The decision that criteria excursions are due to natural conditions is determined by consensus and/or the professional judgment of SCDHEC staff with specific local knowledge.

If the appropriate acute aquatic life criterion for any individual **toxicant (e.g. heavy metals, priority pollutants, ammonia)** is exceeded more than once in five years, representing more than 10 percent of the samples collected, the criterion is not supported. If the acute aquatic life criterion is exceeded more than once, but in less than or equal to 10 percent of the samples, the criterion is partially supported. The USEPA criteria to protect aquatic life for most toxicants are specified as a four-day average and a one-hour average, and have been adopted as state criteria. Because samples are collected as grab samples, and because of sampling frequency, comparisons to chronic toxicity criteria (four-day average concentration) are considered inappropriate; therefore, only the acute criterion (one-hour average) for the protection of aquatic life is used in the water quality assessment.

The total recoverable metals criteria for **heavy metals** are adjusted to account for solids partitioning following the approach set forth in the Office of Water Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria, October 1, 1993, by Martha G. Prothro, Acting Assistant Administrator for Water, available from the Water Resource center, USEPA, 401 M St., SW, mail code RC4100, Washington, DC 20460; and 40CFR131.36(b)(1). Under this approach, a default TSS value of 1 mg/L is used. Where the metals criteria are hardness based, a default value of 25 mg/L is used for waters where hardness is 25 mg/l or less.

If the appropriate criterion for **turbidity** in all waters, and for waters with **numeric total phosphorus, total nitrogen, and chlorophyll-a** criteria is exceeded in more than 25 percent of the samples, the criterion is not supported. If the criterion is exceeded in 25 percent of the samples or less, then the criterion is fully supported.

If the conclusion for any single parameter is that the criterion is “not supported”, then it is concluded that aquatic life uses are not supported for that waterbody, at that monitoring location. If there are no criteria that are “not supported”, but the conclusion for at least one parameter criterion is “partially supported”, then the conclusion is aquatic life uses are partially supported. Regardless of the number of samples, no monitoring site will be listed as partially or not supporting for any pollutant based a single sample result because of the possibility of an anomalous event.

The goal of the standards for aquatic life uses is the protection of a balanced indigenous aquatic community; therefore, biological data is the ultimate deciding factor, regardless of chemical conditions. If biological data shows a healthy, balanced community, the use is considered supported even if chemical parameters do not meet the applicable criteria.

MACROINVERTEBRATE DATA INTERPRETATION

Macroinvertebrate community assessment data are used to directly determine Aquatic Life Use Support and to support determinations based on water chemistry data. Macroinvertebrate community data may also be used to evaluate potential impacts from the presence of sediment contaminants. Aquatic and semi-aquatic macroinvertebrates are identified to the lowest practical taxonomic level depending on the condition and maturity of specimens collected. The EPT Index and the North Carolina Biotic Index are the main indices used in analyzing macroinvertebrate data. To a lesser extent, taxa richness and total abundance may be used to help interpret data.

The EPT Index or the Ephemeroptera (mayflies) - Plecoptera (stoneflies) - Trichoptera (caddisflies) Index is the total taxa richness of these three generally pollution-sensitive orders. EPT values are compared with least impacted regional sites. The Biotic Index for a sample is the average pollution tolerance of all organisms collected, based on assigned taxonomic tolerance values. A database is currently being developed to establish significant EPT index levels to be used in conjunction with the Biotic Index to address aquatic life use support.

Taxa richness is the number of distinct taxa collected and is the simplest measure of diversity. High taxa richness is generally associated with high water quality. Increasing levels of pollution progressively eliminate the more sensitive taxa, resulting in lower taxa richness. Total abundance is the enumeration of all macroinvertebrates collected at a sampling location. When gross differences in abundance occur between stations, this metric may be considered as a potential indicator.

RECREATIONAL USE SUPPORT

Recreational use support is defined as the degree to which the swimmable goal of the Clean Water Act is attained and is based on the frequency of fecal coliform bacteria excursions. A fecal coliform excursion is defined as an occurrence of a bacteria concentration greater than 400/100 ml for all surface water classes. Comparisons to the bacteria geometric mean standard are not considered appropriate based on sampling frequency and the intent of the standard. If 10 percent or less of the samples are greater than 400/100 ml, then recreational uses are said to be fully supported. If the percentage of standards excursions is greater than 10 percent, but less than or equal to 25 percent, then

recreational uses are said to be partially supported. If the percentage of excursions is greater than 25 percent, then it is considered to represent nonsupport of recreational uses.

FISH CONSUMPTION USE SUPPORT

The Department uses a risk-based approach to evaluate fish tissue data and to issue consumption advisories in affected waterbodies. This approach contrasts the average daily exposure dose to the reference dose (RfD). Using these relationships, fish tissue data are interpreted by determining the consumption rates that would not be likely to pose a health threat to adult males and nonpregnant adult females. Because an acceptable RfD for developmental neurotoxicity has not been developed, pregnant women, infants, and children are advised to avoid consumption of fish from any waterbody where a mercury advisory was issued.

Fish consumption use support is determined by the occurrence of advisories or bans on consumption for a waterbody. For the support of fish consumption uses, a fish consumption advisory indicates partial use support, a consumption ban indicates nonsupport of uses.

DRINKING WATER USE SUPPORT

Nonattainment of drinking water use is indicated if the median concentration of the ambient surface water data for any pollutant exceeds the appropriate drinking water Maximum Contaminant Level (MCL), based on a minimum of three samples. Where MCLs do not exist, SCDHEC may use or develop other criteria such that pollutant concentrations or amounts do not interfere with drinking water use, actual or intended, as determined by SCDHEC.

Additional Screening and Prioritization Tools

Evaluation of water quality data and other supplemental information facilitates watershed planning. Information from the following sources is used to develop watershed-based protection and prevention strategies.

LONG-TERM TREND ASSESSMENT

As part of the watershed water quality assessments, surface data from each station are analyzed for statistically significant long-term trends using the Seasonal Kendall Test Without Correction (SKWOC) for significant serial correlation, using procedures in the WQHYDRO computer package developed by Eric Aroner of WQHYDRO Consulting. Flows are not available for most stations, and the parametric concentrations are not flow-corrected. Seasonal Kendall's Tau Analysis is used to test for the presence of a statistically significant trend of a parameter, either increasing or decreasing, over a fifteen-year period. It indicates whether the concentration of a given parameter is exhibiting consistent change in one direction over the specified time period. A two sided test at $p=0.1$ is used to determine statistically significant trends, and the direction of trend. An estimate of the magnitude of any statistically significant trend is calculated.

A rigorous evaluation for trends in time-series data usually includes a test for autocorrelation. The data are not tested for autocorrelation prior to the trend analysis. It is felt that autocorrelation would

not seriously compromise a general characterization of water quality trends based on such a long series of deseasonalized monthly samples.

One of the advantages of the seasonal Kendall test is that values reported as being below detection limits (DL) are valid data points in this nonparametric procedure, since they are all considered to be tied at the DL value. When the DL changed during the period of interest, all values are considered to be tied at the highest DL occurring during that period. Since it is possible to measure concentrations equal to the value of the DL, values less than DL are reduced by subtraction of a constant so that they remain tied with each other, but are less than the values equal to the DL. Since fecal coliform bacteria detection limits vary with sample dilution, there is no set DL; therefore, for values reported as less than some number, the value of the number is used.

For the purposes of this assessment, long-term trends in selected parameters were examined using data collected from 1986 through 2000. In 1992, a phosphate detergent ban was instituted in South Carolina; therefore, for total phosphorus, a second trend assessment is included for the available data from 1992 through 2000, and it is this second time period that is reported in the text.

SEDIMENT SCREENING

There are no sediment standards; therefore, in order to identify sediments with elevated metals concentrations, percentiles are constructed using five years of statewide sediment data. Only values greater than the detection limit were used for chromium, copper, nickel, lead, and zinc. Because so few concentrations of cadmium and mercury are measured above the detection limit, all samples were pooled for these metals. A sediment metal concentration is considered to be high if it is in the top 10% of the pooled results, and very high if it is in the top 5%. Any analytical result above detection limits is flagged for pesticides, PCBs, and other priority pollutants. Sites with noted high metals concentrations or the occurrence of other contaminants above detection limits are prioritized for the collection of biological data, or additional monitoring and investigation, to verify the true situation.

For saltwater sediments, national studies have been conducted by the National Oceanic and Atmospheric Administration (NOAA) and the State of Florida that have developed Sediment Quality Guidelines (SQGs) for the United States and the southeastern region. These SQGs summarize all published toxicology and biomonitoring studies for a given contaminant and ranked them from lowest to highest concentration where an adverse effect was observed. The tenth percentile of the ranked data, from all published studies that reported an adverse effect, is termed the Effects Range Low (ERL) or Threshold Effects Level (TEL) and represents the threshold concentration for toxicity to occur. The median concentration where adverse effects in benthos are observed (the fiftieth percentile) is termed the Effects Range Median (ERM) or Probable Effects Levels (PEL). Measured sediment contaminant levels may be compared with ERLs/ERMs or TELs/PELs to predict potential probability for sediment bound contaminants to cause toxicity in benthic faunal communities. Saltwater sediment contaminant levels were compared with existing sediment quality guidelines by individual compound. Sites with sediments which had individual chemical contaminant concentrations which exceeded ERL/TEL and ERM/PEL guideline levels are identified to indicate that trace metal, pesticide, PAH or PCB concentrations exceeded levels potentially toxic to estuarine organisms.

Groundwater Quality

The state of South Carolina depends upon its groundwater resources to supply an estimated 40 percent of its residents. To monitor the ambient quality of this valuable resource, a network of existing public and private water supply wells has been established that provides groundwater quality data representing all of the State's major aquifers (see SCDHEC's Ambient Groundwater Quality Monitoring Network Report for listing of groundwater quality data). A great deal of monitoring is also being carried out at regulated sites with known or potential groundwater contamination (see SCDHEC's South Carolina Groundwater Contamination Inventory).

The ambient monitoring network has been designed to avoid wells in areas of known or potential contamination in order to analyze natural aquifer conditions. Information collected can then be used to identify variations in water chemistry among the major aquifers of South Carolina and give a general understanding of the groundwater conditions throughout the state at varying depths.

There are several aquifers underlying the Santee River Basin including: the Middendorf Aquifer, the Black Creek Aquifer, the Pee Dee Aquifer, the Black Mingo Aquifer, the Tertiary Limestone Aquifer, and the Surficial Aquifer. All well samples met state standards for Class GB groundwater (see section on Classified Waters, Standards, and Natural Conditions). The ambient monitoring well sites are indicated in the appropriate watershed evaluations and depicted on the watershed maps.

Middendorf Aquifer

The Middendorf Aquifer overlies the crystalline bedrock and associated saprolite and stretches from the upper coastal plain beyond the Atlantic coastline where it is buried by younger Coastal Plain sediments at maximum depths of over 3000 feet. The Middendorf Aquifer is tapped by only a few wells in the middle and lower coastal plain regions. The lower usage toward the coast is primarily a result of the presence of shallower, more economically developed aquifers such as the Black Creek and Tertiary Limestone (Floridan) Aquifers. Middendorf sediments are comprised of fine to coarse quartzitic and arkosic sands, with discontinuous interbeds of sandy clays, kaolins, and gravel. Lower coastal plain water from the Middendorf Aquifer is often highly mineralized. The downdip increase in ion concentration is thought to be largely a function of the residence time of the water in the aquifer (flow is from the updip recharge area in the upper coastal plain toward downdip, coastal area), as well as from the possible mixing of more mineralized water from adjacent aquifers.

There is a downdip increase in pH from the upper coastal plain (Elgin, AMB-120) to wells in the lower Santee basin [e.g. Summerville (AMB-022), and Mt. Pleasant (AMB-119)]. This is in contrast to the much lower, acidic pH values found in the recharge area where buffering effects are not significant. Other changes in groundwater chemistry from the Middendorf's shallow recharge area to deeper portions of the aquifer include a less distinct downdip increase in fluoride concentrations.

Black Creek Aquifer

The Black Creek Aquifer consists of medium to coarse-grained glauconitic and phosphatic quartz

sands interbedded with lenses of lignitic and micaceous clays. In some areas, the Black Creek Aquifer is hydraulically similar to, and screened in the same well with, the underlying Middendorf Aquifer. Yields of over 1000 gallons per minute (gpm) from the Black Creek are quite common when wells are screened in both aquifers. Yields that were recorded for Black Creek wells in the monitoring network ranged from 50 to 1500 gpm.

Similar to the Middendorf Aquifer, Black Creek Aquifer water chemistry also indicates a relationship between distance from recharge area and certain chemical concentrations. The high fluoride values in the Black Creek may be attributable to the presence of fluorapatite from the abundant fossilized shark teeth in the formation. Values of pH in the Black Creek Aquifer are generally alkaline, with a much less distinct trend toward higher downdip values than those observed in the Middendorf Aquifer. Samples obtained from the Black Creek aquifer display high variability in their composition, and samples from the recharge areas through the middle coastal plain often show no dominant ionic affinity. With increased distance from the recharge area, Black Creek waters become more buffered and are typically a sodium bicarbonate type.

Pee Dee Aquifer

The Pee Dee Aquifer constitutes a minor water resource in the majority of the study area even though the Pee Dee Formation is present throughout the entire Santee basin. Within the study area the Pee Dee is generally a poor producing aquifer, as grain size and lithology are non-conducive to high yielding wells. Analysis of a core near Charleston averaged 60% sand with the remainder being clay, or silt, while near Summerville, the Pee Dee has been described as a silty clay, and appears to behave more as a confining unit than an aquifer.

Water quality of the Pee Dee aquifer in the Santee basin has been documented from few wells completed in the formation. Of those wells, sodium bicarbonate-type water is the dominant species, becoming more saline with proximity to the Atlantic coast. The single Pee Dee aquifer well (AMB-053) sampled during 2002 for the Ambient Groundwater Quality Network displayed an intermediate composition between calcium and sodium bicarbonate types and was hard due to an abundance of calcium and magnesium.

Black Mingo Aquifer

The Black Mingo Formation occurs stratigraphically above the Pee Dee Formation, and below the Santee limestone that comprises the Tertiary Limestone Aquifer. The Black Mingo is utilized in much of Berkeley and Dorchester Counties, and wells tapping the formation commonly also utilize the Tertiary Limestone Aquifer for additional capacity. Lithology of the Black Mingo is varied and is composed of several prominent members. Of those, black silty clay (shale), calcite- and silica-cemented sandstone beds, and grey limestone are common.

As found in other aquifer systems near the coast, water quality varies with depth and/or proximity to sources of saline water. Samples collected found that pH ranged between 6.6 near the recharge area to 8.0 reflecting the buffered bicarbonate nature of the water. Fluoride content in samples ranged between 0.1 ppm and 1.0 ppm, while dissolved silica concentrations in the samples from the Black Mingo Aquifer

were high, with three of the four samples exceeding 40 ppm.

Tertiary Limestone Aquifer

The Tertiary Limestone Aquifer (also known as the Floridan Aquifer) is utilized primarily in Berkeley, Charleston, and Dorchester counties. The Tertiary Limestone Aquifer includes parts of the Cooper Group and the Santee Formation, and is composed of limestone that ranges from white, fossiliferous and pure to impure sandy and clayey varieties. Well yields vary from less than 10 gpm to greater than 400 gpm and are controlled by the occurrence of solution cavities and openings in the limestone. Water from the Tertiary Limestone Aquifer can be distinguished from the other noncarbonate aquifers in the state by its high concentration of calcium and bicarbonate ions and basic pH. This elevated ion concentration is also reflected in specific conductance and total dissolved solids (TDS) levels. In wells adjacent to the coast, sodium is the dominant cation, apparently a result of seawater/freshwater mixing. As many wells that are drilled into the Santee limestone also utilize the Black Mingo aquifer (and thus mix aquifer chemistries), no wells in the watershed were located that were open only to the Santee Limestone, thus no samples are taken from this aquifer.

Surficial Aquifer

The Surficial Aquifer is a shallow, lower coastal plain aquifer system that is utilized mainly as a source of private water supply for homes and small industry. The aquifer matrix is composed of sands deposited as dunes, barrier islands, near-shore deltas and submarine bars, and to a lesser extent alluvium adjacent to major rivers during the Pleistocene and Holocene epochs. The aquifer consists mainly of quartz sand with clay and silt lenses and is the water table aquifer over most of its extent. Due to its proximity to both the land surface and the ocean, the water from the Surficial Aquifer is predictably high in dissolved solids and displays elevated levels of sodium, chloride, some sulfur, and a widely varied pH ranging from 6.2 to 8.6. Amounts of dissolved solids are also widely varied, ranging from 80 to 2400 ppm. Water pumped from this aquifer typically has an obvious odor and distinct taste but is still within standards for drinking water, except where it has been influenced by tidal water bodies or contamination. Despite the higher levels of dissolved solids, this aquifer is frequently utilized because its shallow nature allows for inexpensive well construction and yields are adequate for domestic use. It should be noted that due to the shallow, unconfined nature of the Surficial Aquifer, the system is extremely susceptible to contamination, both natural and man-made. Such sources of contamination include septic tanks, above and underground petroleum storage tanks, brackish water from tidal creeks and wetlands, and other point and non-point sources from roadways, and agricultural and industrial operations.

NPDES Program

The Water Facilities Permitting Division is responsible for drafting and issuing National Pollutant Discharge Elimination System (NPDES) permits. Facilities are defined as either "major" or "minor". For

municipal permits, a facility is considered a "major" if it has a permitted flow of 1 MGD or more and is not a private facility. The determination for industrial facilities is based on facility and stream characteristics, including toxicity, amount of flow, BOD (biological oxygen demand) loading, proximity of drinking water source, potential to exceed stream standards, and potential effect on coastal waters.

Permitting Process

A completed draft permit is sent to the permittee, the SCDHEC District office, and if it is a major permit, to the USEPA for review. A public notice is issued when the permit draft is finalized. Comments from the public are considered and, if justified, a public hearing is arranged. Both oral and written comments are collected at the hearing, and after considering all information, the Department staff makes the decision whether to issue the permit as drafted, issue a modified permit, or to deny the permit. Everyone who participated in the process receives a notice of the final decision. A copy of the final permit will be sent to anyone who requests it. Staff decisions may be appealed according to the procedures in R.61-72 and the rule of the Administrative Law Court of South Carolina.

The permitting Divisions use general permits with statewide coverage for certain categories of discharges. Discharges covered under general permits include utility water, potable surface water treatment plants, potable groundwater treatment plants with iron removal, petroleum contaminated groundwater, mine dewatering activities, aquaculture facilities, bulk oil and gas terminals, hydrostatic test waters (oil & gas lines), and vehicle wash waters. Additional activities proposed for general permits include ready-mix concrete/concrete products and concentrated animal feeding operations. State Land application systems for land disposal and lagoons are also permitted.

Wasteload Allocation Process

A wasteload allocation (WLA) is the portion of a stream's assimilative capacity for a particular pollutant that is allocated to an existing or proposed point source discharge. Existing WLAs are updated during the basin review process and included in permits during the normal permit expiration and reissuance process. New WLAs are developed for proposed projects seeking a discharge permit or for existing discharges proposing to increase their effluent loading at the time of application. Wasteload allocations for oxygen demanding parameters and nutrients are developed by the Water Quality Modeling Section, and WLAs for toxic pollutants and metals are developed by the appropriate permitting division.

The ability of a stream to assimilate a particular pollutant is directly related to its physical and chemical characteristics. Various techniques are used to estimate this capacity. Simple mass balance/dilution calculations may be used for a particular conservative (nondecaying) pollutant while complex models may be used to determine the fate of nonconservative pollutants that degrade in the environment. Waste characteristics, available dilution, and the number of discharges in an area may, along with existing water quality, dictate the use of a simple or complex method of analysis. Projects that generally do not require complex modeling include: groundwater remediation, noncontact cooling water, mine dewatering, air washers, and filter backwash.

Streams are designated either effluent limited or water quality limited based on the level of treatment required of the dischargers to that particular portion of the stream. In cases where the USEPA published effluent guidelines and the minimum treatment levels required by law are sufficient to maintain instream water quality standards, the stream is said to be effluent limited. Streams lacking the assimilative capacity for a discharge at minimum treatment levels are said to be water quality limited. In cases where better than technology limits are required, water quality, not minimum requirements, controls the permit limits. The Department's Water Quality Modeling Section develops limits for numerous parameters including ammonia nitrogen (NH3-N), dissolved oxygen (DO), and five-day biochemical oxygen demand (BOD5). Limits for other parameters, including metals, toxics (including total residual chlorine), and nutrients are developed by the Water Facilities Permitting Division in conjunction with support groups within the Department.

Nonpoint Source Management Program

Nonpoint source (NPS) water pollution, sometimes called “runoff pollution” or “polluted runoff” does not result from a discharge at a specific, single location (or point), but generally comes from diffuse, numerous sources. Runoff occurring after a rain event may transport sediment from plowed fields, construction sites, or logging operations, pesticides and fertilizers from farms and lawns, motor oil and grease deposited on roads and parking lots, or bacteria containing waste from agricultural animal facilities or malfunctioning septic systems. The rain moves the pollutants across the land to the nearest waterbody or storm drain where they may impact the water quality in creeks, rivers, lakes, estuaries, and wetlands. NPS pollution may also impact groundwater when it is allowed to seep or percolate into aquifers. Adverse effects of NPS pollution include physical destruction of aquatic habitat, fish kills, interference with or elimination of recreational uses of a waterbody (particularly lakes), closure of shellfish beds, reduced water supply or taste and odor problems in drinking water, and increased potential for flooding because waterbodies become choked with sediment.

Congress recognized the growing problem of nonpoint source pollution in the late 1980s, and added NPS provisions to the federal law. Section 319 of the 1987 Amendments to the Clean Water Act required states to assess the nonpoint source water pollution associated with surface and groundwater within their borders and then develop and implement a management strategy to control and abate the pollution. The first Assessment of Nonpoint Source Pollution in South Carolina accomplished this purpose. The Department’s Bureau of Water manages the ongoing State NPS Management Program, which develops strategies and targets waterbodies for priority implementation of management projects. Section 319 funds various voluntary efforts, including watershed projects, which address many aspects of the pollution prevention management measure and provide education, outreach and technical assistance to various groups and agencies. Most of the projects are implemented by cooperating agencies.

Many land activities can individually or cumulatively contribute to NPS pollution. Eight categories of NPS pollution sources have been identified as contributing to water quality degradation in South Carolina: agriculture, forestry, urban areas, marinas and recreational boating, mining, hydrologic modification, wetlands and riparian areas disturbance, land disposal, and groundwater contamination. There are programs in place, both regulatory and voluntary to address all eight categories.

Agriculture

In South Carolina, pesticides, fertilizers, animal waste, and sediment are potential sources of agricultural NPS pollution. Agricultural activities also have the potential to directly impact the habitat of aquatic species through physical disturbances caused by livestock or equipment, and through the management of water. The State has laws and regulations that prevent NPS pollution from several agricultural sources including pesticides and animal waste. Funding programs including those under §319 grants from EPA, cost share funds from USDA under EQIP, and CRP are used to implement best management practices that are not covered under regulations. Agriculture land acreage is quantified in the basin-wide and individual watershed evaluations.

Silviculture

Forests comprise a major portion of South Carolina's land base. Sixty-six percent, or 12.6 million acres, of the State's total land area is in timberland. Silvicultural practices associated with road access, harvest, and regeneration of timber present the most significant potential for NPS pollution. Silvicultural activities have the potential to degrade the State's waters through the addition of sediment, nutrients, organics, elevated temperature, and pesticides. Erosion and subsequent sedimentation are the most significant and widespread NPS problems associated with forestry practices. Sudden removal of large quantities of vegetation through harvesting or silvicultural practices can also increase leaching of nutrients from the soil system into surface waters and groundwaters. Programs to abate or control NPS pollution from forestry activities are primarily the responsibility of the S.C. Forestry Commission (SCFC) and the United States Department of Agriculture's Forest Service (USFS), with other agencies having supplementary programs. S.C. Forestry Commission provides monthly courtesy exams to SCDHEC's Division of Water Quality and to forest industries. If water quality was impacted by a forestry operation, SCDHEC may institute enforcement action under the South Carolina Pollution Control Act. The United States Department of Agriculture's Natural Resources Conservation Service (USDA-NRCS) also provides technical assistance to government, landowners, and land users. Forest land acreage is quantified in the basin-wide and individual watershed evaluations.

Urban Areas

Urbanization has been linked to the degradation of urban waterways. The major pollutants found in runoff from urban areas include sediment, nutrients, oxygen-demanding substances, heavy metals, petroleum hydrocarbons, pathogenic bacteria, and viruses. Suspended sediments constitute the largest mass of pollutant loadings to receiving waters from urban areas. Construction sites are a major source of sediment erosion. Nutrient and bacterial sources of contamination include fertilizer usage, pet wastes, leaves, grass clippings, and faulty septic tanks. Petroleum hydrocarbons result mostly from automobile sources. In the 1980's, the average statewide population growth was 11.7 percent, while the coastal counties had an increase of 22 percent, nearly double the State rate during the same time period. This continuing development and population growth has the potential to make urban runoff the most significant source of

pollution in waters of the State in the future. Urban land acreage is quantified in the basin-wide and individual watershed evaluations.

SCDHEC has a number of statewide programs that address components of urban NPS pollution. The Bureau of Water administers four permitting programs that control runoff from new and existing urban sources. These include the Stormwater and Sediment Reduction program, Municipal Separate Storm Sewer System (MS4), Industrial NPDES Stormwater Permits, and the §401 water quality certification program (see p.27). Additional controls for urban runoff in the coastal zone are implemented by SCDHEC's Oceans and Coastal Resources Management (OCRM) through the State Coastal Zone Management Plan.

SCDHEC's Bureau of Environmental Health's Division of Onsite Wastewater Management administers the Onsite Sewage Disposal System program for the entire State, and oversees the permitting for the installation and management of septic systems. Although not associated with urban land use, this Division permits the septic systems of camping facilities if the facility is not on public sewer. The camp sewage is discharged into a public collection, treatment and disposal system if available, or an onsite wastewater treatment and disposal system (septic tank) is used.

Marinas and Recreational Boating

Potential adverse environmental impacts associated with marinas include dissolved oxygen deficiencies, high concentrations of toxic metals in aquatic organisms, and the potential to cause bacterial contamination of shellfish harvesting areas. In addition, marina construction activities can lead to the physical destruction of sensitive ecosystems and bottom-dwelling aquatic communities. Presently, there are more than 100 marinas in South Carolina, with 68 of them in the coastal zone. The U.S. Army Corps of Engineers and the SCDHEC are responsible for permitting marinas in South Carolina. Within SCDHEC, the two offices that have marina permitting authority are the Office of Ocean and Coastal Resource Management (SCDHEC OCRM) and the Office of Environmental Quality Control (SCDHEC Bureau of Water). SCDHEC OCRM issues critical area permits for marinas within the critical area of the coastal zone. SCDHEC Bureau of Water issues permits for marinas at all other locations within the State and issues §401 Water Quality Certifications (see p.27) for marinas statewide. The U.S. Coast Guard and the S.C. Department of Natural Resources are responsible for managing recreational boating activity.

Mining

South Carolina's mineral production consists of non-fuel minerals that provide raw materials for construction products and a precious metal industry. Portland cement clays (kaolin and brick), sand and gravel, and crushed stone represent the majority of the total mineral value. At the end of FY 2004-2005, there were 548 mining operations in South Carolina affecting more than 28,778 acres. There were 678 acres of mine land reclaimed during this same fiscal year, which brings the cumulative total of mine land reclaimed since the beginning of the mining and reclamation program to 15,227 acres. Surface mining has the potential to generate NPS pollution during mineral exploration, mine development extraction, transportation, mining and processing, product storage, waste disposal, or reclamation. Potential nonpoint source impacts related to mining activities generally include hydrologic modification, erosion and sedimentation, water quality deterioration, fish and wildlife disturbances, and public nuisances.

The Department's Bureau of Land and Waste Management has primary regulatory responsibility for mining activities. Within the Bureau, the Division of Mining and Solid Waste Permitting is responsible for administering and implementing the S.C. Mining Act and its associated regulations. The Mining Act serves as part of an overall management plan for NPS pollution from active mines. Mining activities and locations are identified in the appropriate watershed evaluations.

Hydromodification

Hydrologic modification (or hydromodification) is defined as stream channelization, channel modification, and dam construction. These activities can negatively impact water quality, destroy or modify in-stream habitat and increase streambank and shoreline erosion. Two State permits, implemented by the SCDHEC, are involved in the implementation of management measures for hydromodification. A critical area permit is required for coastal waters, saltwater wetlands, and beaches defined as critical areas. A navigable waters permit is required for the remainder of the State. Implementation of State policy for dam construction is similar to control of other hydromodification projects in South Carolina, requiring the same State permits and certifications. In addition, dams require a State dam safety permit or a State stormwater management and sediment reduction permit. The Department must also issue Water Quality Certifications pursuant to §401 of the Federal Clean Water Act for dam construction and hydropower operations licensed by the Federal Energy Regulatory Commission.

Wetlands

Twenty-three percent of South Carolina is covered by 4.5 million acres of wetlands. The U.S. Army Corps of Engineers implements the federal program for regulating development in wetlands with guidelines established by EPA. The Corps delineates wetlands and determines which wetlands fall under regulatory jurisdiction and require a federal permit for development. The Wetlands Reserve Program, administered by the NRCS, is designed to restore and protect wetlands. At the state level, the primary focus of wetland regulation is the §401 Water Quality Certification. In the §401 certification process, applications for wetland alterations may be denied or modified due to the special nature of a wetland or the functions that a wetland provides. Wetland impacts must be compensated through restoration, enhancement, preservation, or creation and protected in perpetuity. Future development would be prohibited in these mitigated and legally protected areas. Knowledge of areas that are restricted from development due to mitigation or special water classification is useful in planning future development in a watershed. Wetland acreage is quantified in the basin-wide and individual watershed evaluations.

Land Disposal

Although modern solid waste disposal sites are considered point sources of pollution and regulated, leachate from sanitary landfills and dumps have the potential to pollute large portions of adjacent groundwater aquifers. Toxic compounds are commonly a part of the overall composition of landfill leachate, especially when the landfill has been used for the disposal of toxic chemicals. There are currently 140 permitted landfills in South Carolina. This total represents 35 municipal solid waste landfills (MSWLF), 62 industrial waste landfills, 41 construction and demolition (C&D) landfills, one sludge

monofill, and one ash monofill. Regulatory authority over solid waste disposal activities resides with SCDHEC's Bureau of Land and Waste Management. All active and closed industrial and municipal solid waste landfills are identified in the appropriate watershed evaluations.

Land application of wastewater or its by products is a form of recycling because it allows recovery of elements needed for crop production. Land application of biosolids may be beneficial and environmentally sound when applied at the correct agronomic rate. Land applying biosolids can benefit farmers by offsetting the costs of fertilizer and lime while reducing the pressure on existing landfills. SCDHEC's Bureau of Water, Division of Water Monitoring, Assessment and Protection, Groundwater Quality Section conducts a program to prevent, monitor, and correct groundwater contamination from nonpoint source pollution from land application of wastewater biosolids, solids, animal manures, biosolids, and sewage sludge. Land application, which is not a discharge, requires a "no discharge" permit (ND). All active industrial and municipal land applications are identified in the appropriate watershed evaluations.

Groundwater Contamination

All aquifers in the State are potential Underground Sources of Drinking Water and are protected under the S.C. Water Classifications and Standards. Groundwaters are thus protected in a manner consistent with the SCDHEC groundwater protection strategy. Staff hydrogeologists implement a screening program for nonpoint source impacts from pits, ponds, and lagoons associated with the permitted storage, treatment, and disposal of industrial and municipal wastewaters. In cases where a groundwater impact has been identified in violation of S.C. Water Classifications and Standards, appropriate actions will be coordinated with the facility owner to ensure regulatory compliance. The hydrogeologist coordinates with the facility owner to implement source identification, contaminant extent assessments, initiation of contaminant remediation systems, and performance evaluations of corrective actions. In addition to releases from wastewater treatment systems, the staff evaluates releases from other nonpoint sources such as above ground tanks, nonregulated fuel oil tanks, spills and/or leaks. Sites with confirmed groundwater impact will be placed under a Consent Agreement or an Order. SCDHEC's South Carolina Groundwater Contamination Inventory quantifies the status of groundwater quality in South Carolina. The sites in the inventory are known groundwater contamination cases in the State, and are referenced by name and county, and updated annually.

Water Quantity

Any withdrawal of surface water or groundwater over 3 million gallons in any month is required to be reported to the Department (per the *Surface Water Withdrawal and Reporting Act* 49-4-10 and the *Groundwater Use and Reporting Act* 49-5-10). These data are compiled into an annual report of total water usage in the state (see SCDHEC's South Carolina Water Use Report). The report also breaks down water usage into categories of interest such as water supply, hydropower, agriculture, and irrigation. In Capacity Use Areas, which are of concern due to the significant groundwater use and subsequent lowering of groundwater levels in major aquifers, withdrawals over 3 million gallons in any month must receive a permit from the Department. Currently, no quantity permit is required for surface water withdrawals.

Interbasin Transfer of Water

According to The State Interbasin Transfer of Water Act, an interbasin transfer of water permit is required when any entity desires to withdraw, divert, pump, or cause directly the transfer of either 5% of the 7Q10 (seven day, ten year low flow), or one million gallons or more of water a day on any day, whichever is less, from one river basin and use or discharge all or any part of the water in a different river basin. The SCDHEC Board is empowered to negotiate agreements, accords, or compacts on behalf of and in the name of the State of South Carolina with other states or the United States, or both, with any agency, department, or commission of either, or both, relating to transfers of water that impact waters of this State, or are connected to or flowing into those waters. The Board is further empowered to represent this State in connection with water withdrawals, diversions, or transfers occurring in other states, which may affect this State.

Growth Potential and Planning

Land use and management can define the impacts to water quality in relation to point and nonpoint sources. Assessing the potential for an area to expand and grow allows for water quality planning to occur and, if appropriate, increased monitoring for potential impairment of water quality. Indicators used to predict growth potential include water and sewer service, road and highway accessibility, and population trends. These indicators and others were used as tools to determine areas having the greatest potential for impacts to water quality as a result of development.

SCDHEC's Strategic Plan for 2000-2005 (www.scdhec.gov/news/releases/pdf files/Stratpln.pdf) acknowledges that growth issues are best handled at the local government level. SCDHEC's role is to work with local governments and communities to help them understand the importance of planning for smart growth: buffers, greenspaces, mass transit, subdivision and roadway planning, bike paths and bike lanes, and park and ride lots. SCDHEC can also provide assistance in helping local entities access information and provide consultation on technical issues such as the establishment of buffers and watershed stormwater planning. Many counties in the Santee River Basin lack county wide zoning ordinances; therefore, there is little local regulatory power to influence the direction or magnitude of regional growth. The majority of municipalities have zoning ordinances in place; however, much of the growth takes place just outside the municipal boundaries, where infrastructure is inadequate. Section 208 of the Clean Water Act serves to encourage and facilitate the development and implementation of areawide waste treatment management plans. The §208 Areawide Water Quality Management Plans were completed in great detail during the 1970's and have recently been updated. Information from the updated reports is used in the individual watershed evaluations. South Carolina's water quality management plans support consolidation of wastewater treatment facilities into larger regional systems.

Watershed boundaries extend along topographic ridges and drain surrounding surface waters. Roads are commonly built along ridge tops with the best drainage conditions. Cities often develop in proximity to ridges as a result of their plateau terrain. It is not uncommon, then, to find cities or road corridors located along watershed boundaries, and thus influencing or impacting several watersheds.

Watershed Protection and Restoration Strategies

SCDHEC's Bureau of Water is responsible for ensuring that South Carolina's water is safe for drinking and recreation, and suitable to support aquatic life. This section provides an overview of other important Bureau programs and strategies applied statewide to protect and restore water quality. The point and nonpoint source controls described previously assist with achieving these goals.

Under §303(d) of the Federal Clean Water Act, each state is required to provide a comprehensive inventory of impaired waters for which existing required pollution controls are not stringent enough to achieve State water quality standards or Federal Clean Water Act goals. This biennial list, commonly referred to as the "303(d) list", is the basis for targeting waterbodies for watershed-based solutions. A copy of the current §303(d) list can be obtained by contacting the Bureau of Water. Several Bureau programs address these impaired streams in an effort to restore them.

Total Maximum Daily Load

A Total Maximum Daily Load (TMDL) is the calculated maximum allowable pollutant loading to a waterbody at which water quality standards are maintained. A TMDL is made up of two main components, a load allocation and a wasteload allocation. A load allocation is the portion of the receiving water's loading capacity attributed to existing or future nonpoint sources or to natural background sources. The waste load allocation is the portion of a receiving water's loading capacity allocated to an existing or future point source.

A TMDL is a means for recommending controls needed to meet water quality standards in a particular water or watershed. Historically, the typical TMDL has been developed as a wasteload allocation, considering a particular waterbody segment, for a particular point source, to support setting effluent limitations. In order to address the combined cumulative impacts of all sources, broad watershed-based TMDLs are now being developed.

The TMDL process is linked to all other State water quality activities. Water quality impairments are identified through monitoring and assessment. Watershed-based investigations result in source identification and TMDL development. TMDLs form links between water quality standards and point and nonpoint source controls. Where TMDLs are established, they constitute the basis for NPDES permits and for strategies to reduce nonpoint source pollution. The effectiveness and adequacy of applied controls are evaluated through continued monitoring and assessment.

Funding for TMDL implementation is currently available with USEPA’s §319 of the Clean Water Act grants. For more information, see the Bureau of Water web page www.scdhec.gov/water or call the Watershed Program at (803) 898-4300.

Antidegradation Implementation

The State's Antidegradation Policy as part of S.C. Regulation 61-68 is represented by a three-tiered approach to maintaining and protecting various levels of water quality and uses; streams included on the §303(d) list are addressed under Tier 1. Tier 1 antidegradation policies apply to all waters of the State and require that existing uses and the minimum level of water quality for those uses be maintained and protected. Tier 2 policies apply to high quality water where the water quality exceeds the mandatory minimum levels to support the Clean Water Act's goals of propagation of fish, shellfish, wildlife, and recreation in and on the water. The Department considers all the waters of the State as high quality waters. Tier 3 policies apply to the maintenance of water quality in waters that constitute an Outstanding National Resource Water and do not allow for any permanent permitted dischargers. Outstanding Resource Waters of the State are provided a higher level of protection than Tier 2, but do not meet the requirements of Tier 3.

Tier 1 protection will be implemented when applying numeric standards included in Regulation 61-68 for human health, aquatic life, and organoleptic protection as follows: if a waterbody has been affected by a parameter of concern causing it to be on the §303(d) list, then the Department will not allow a permitted net increase of loading for the parameter of concern unless the concentration will not contribute to a violation of water quality standards. This no net increase will be achieved by reallocation of existing total load(s) or by meeting applicable water quality standard(s) at the end-of-pipe. No discharge will be allowed to cause or contribute to further degradation of a §303(d) listed waterbody.

The Antidegradation Rules apply to both nonpoint source pollution and for point sources into impaired waters. Many activities contributing to nonpoint source pollution are controlled with voluntary measures. The Department implements permitting or certification programs for some of these activities and has the opportunity to ensure compliance with the Antidegradation Rules. The activities of primary concern are land development projects which are immediately adjacent to and discharge runoff or stormwater into impaired waters.

401 Water Quality Certification Program

If a Federal permit for a discharge into waters of the State, including wetlands, is required, the Department must issue Water Quality Certification pursuant to §401 of the Federal Clean Water Act. Certification is required for permits issued by the U.S. Army Corps of Engineers for construction in navigable waters and for deposition of dredged or fill material.

Regulation 61-101 presents administrative and technical guidance for the water quality certification program and requires SCDHEC to consider whether or not a project is water dependent; whether or not there are feasible alternatives which will have less adverse consequences on water quality and classified uses; the intended purpose of the project; and all potential water quality impacts of the project, both direct and indirect, over the life of the project. Any project with the potential to affect waters of the State must be conducted in such a manner to maintain the specified standards and classified and existing water uses.

As a routine part of the §401 Water Quality Certification review process, the waterbody in question is identified as impaired or not impaired according to the §303(d) list. If it is impaired, the parameter of concern is noted, along with any steps required to prevent further degradation of the water

quality of that waterbody. In an effort to facilitate watershed restoration where appropriate, mitigation for unavoidable wetland impacts is encouraged in areas that improve §303(d) listed waters.

Stormwater Program

Stormwater discharges result from precipitation during rain events. Runoff washes pollutants associated with industrial activities (including construction activity), agricultural operations, and commercial and household sites directly into streams, or indirectly into drainage systems that eventually drain into streams. The SCDHEC Stormwater Permitting Program focuses on pollution prevention to reduce or eliminate stormwater pollution. The Department has general permitting authority for stormwater discharges associated with industrial activity, including construction. General NPDES permits SCR000000 and SCR100000 for industrial and construction activities, respectively, require permittees to develop and implement stormwater pollution prevention plans that establish best management practices to effectively reduce or eliminate the discharge of pollutants via stormwater runoff. The Stormwater and Agricultural Permitting Section is responsible for issuing NPDES stormwater permits to prevent degradation of water quality as well as for issuing state sediment and erosion control permits for construction sites.

The NPDES permits are issued under the authority of the federal Clean Water Act and the S.C. Pollution Control Act. The state sediment and erosion control permits are issued under the authority of two S.C. laws. The S.C. Erosion and Sediment Reduction Act of 1983 addresses construction on state owned or managed land. The S.C. Stormwater Management and Sediment Reduction Act of 1991 addresses construction on land that is not state owned or managed. Currently, NPDES permits are required for: construction sites 1 acre and greater; construction sites in the coastal area that are within 1/2 mile of a receiving water body; and construction sites less than 1 acre on a case-by-case basis where water quality is a concern. Permits are required under the state sediment and erosion control for construction sites that are greater than 2 acres; however, there are exemptions under the law and regulation. The State Sediment and Erosion Program is somewhat duplicative of the NDPES Stormwater Program. The state program created by the 1991 Act can be delegated to local governments. Until a local government becomes delegated, SCDHEC's Office of Ocean and Coastal Resource Management is delegated the State Sediment and Erosion Control Program in the coastal area. The Stormwater and Agricultural Permitting Section manages the NPDES Stormwater Program in all areas of the state and the State Sediment and Erosion Control Program in the areas of the state where the program is not delegated to another entity.

Regulation 61-9 requires a compilation of all existing State water quality data with STORET data being used as a baseline. If analysis indicates a decrease in water quality then corrective measures must be taken. The permittee will identify all impaired water bodies in a Stormwater Management Plan (SWMP). In addition, existing pollution discharge control methods will be identified and incorporated into the SWMP. Procedures, processes, and methods to control the discharge of pollutants from the municipal separate storm sewer system (MS4) into impaired waterbodies and publicly owned lakes included on the §303(d) list will be described in the SWMP. The effectiveness of these controls will be assessed and necessary corrective measures, if any, shall be developed and implemented.

Permits for municipal systems allow communities to design stormwater management programs that are suited for controlling pollutants in their jurisdiction. There are three population-based categories of municipal separate storms sewers: large municipal (population of 250,000 or greater), medium municipal (population of 100,000 or more but less than 250,000), and small municipal (population less than 100,000). Large and medium MS4s have been regulated since the 1990s. Those small MS4s within the boundaries of an urbanized area are called Regulated Small MS4s and were required to submit MS4 NPDES applications on or before March 10, 2003. MS4 NPDES Permits are required for all large, medium, and regulated small MS4s.

South Carolina Animal Feeding Operations Strategy

Among the general categories of pollution sources, agriculture ranks as the number one cause of stream and lake impairment nationwide. Many diseases can potentially be contracted from drinking water or coming into contact with waters contaminated with animal wastes. The Department uses S.C. Regulation 61-43: *Standards for the Permitting of Agricultural Animal Facilities* to address the permitting of animal feeding operations (AFOs). Implementing these regulations and their corresponding compliance efforts are a priority for the Department in order to reduce public health and environmental impacts from AFOs. There are approximately 1,100 active AFOs in S.C. While previously, there were no federally defined concentrated animal feeding operations (CAFOs) in operation in South Carolina, EPA modified the definition of a CAFO in the NPDES regulations in December 2002. These regulations have now been adopted in S.C. Based on the new federal CAFO definition, S.C. has approximately 200 CAFOs that require NPDES permits. Using the Watershed Program cycle and the division of the State into five regions, AFOs will be monitored and inspected by region. The §303(d) list will be used to prioritize the inspections. After all the inspections have been made in a region, the Department will move to the river basins in the next region in the watershed cycle. The Department is continuing to work in cooperation and coordination with the U.S. Department of Agriculture, the Natural Resources Conservation Service, the S.C. Department of Agriculture, the S.C. Soil and Water Conservation Districts, and the Clemson Extension Service.

Sanitary Sewer Overflow Strategy

Sanitary sewers are designed to collect municipal and industrial wastewater, with the allowance for some acceptable level of infiltration and inflow, and transport these flows to a treatment facility. When the sewer system is unable to carry these flows, the system becomes surcharged and an overflow will occur. Sanitary sewer overflows (SSOs) have existed since the introduction of separate sanitary sewers, and most overflows are caused by inadequate operation, maintenance, and management of the collection system.

The Department encourages utilities to embrace the principals of EPA's capacity Management, Operations, and Maintenance (cMOM) program. Through this program utilities can ensure adequate funding and capacity as well as a proactive approach to operations and maintenance. Those that have implemented cMOM programs have been able to significantly reduce or eliminate overflows from their

collection systems. Additionally, the Department has adopted requirements for operation and maintenance of sewer systems in Regulation 61-9, Water Pollution Control Permits.

The Department's approach has been to shift resources historically applied to treatment plant inspections to include evaluations of pump stations and collection systems where problems are suspected. To assist evaluators in identifying water quality violations related to SSOs, staff have utilized the 303(d) list of impaired waters to identify waters impacted by fecal coliform or other appropriate pollutants and correlate those with collection systems with incidences of SSOs. The Department's Enforcement Referral Procedures Document is to be used to determine when a collection system should be referred to enforcement for SSOs. The enforcement process allows for the Department to consider actions taken by the collection system such as: timely and proper notification, containment and mitigation of discharge, voluntarily conducting self evaluations, and requests for compliance assistance. The Department will take immediate action where it has been determined that SSOs have occurred and the collection system has not made timely and proper notification.

Referral Strategy for Effluent Violations

The Department has developed referral effluent violation guidelines to specifically address discharges into impaired waters. The goal of the referral guidelines is to reduce pollutant discharges into impaired waters in order to ultimately restore them to their full potential usage. To achieve this goal, enforcement actions are initiated earlier in an effort to improve the quality of waters that do not meet standards. If a stream is impaired by a pollutant and the permit limit for that pollutant is exceeded more than once in a running annual reporting period, formal enforcement action will be initiated against the discharger.

SCDHEC's Watershed Stewardship Programs

Public participation is an important component of the Department's Watershed Water Quality Management Program. Benefits to this interaction on the local level include improved public awareness about SCDHEC water programs, and increased local interest and participation in water quality improvement. Described below are some of the Department's water programs that encourage public interest and involvement in water quality. These programs and their contacts are listed on the Department's website at www.scdhec.gov/water.

Source Water Assessment Program

A safe, adequate source of drinking water is key to development of communities and the health of citizens. The Safe Drinking Water Act (SDWA) provides authority to protect sources of drinking water. As a result of the 1996 amendments to the SDWA, source water protection has become a national priority. States are required to develop a plan for assessment of source waters for all federally defined public groundwater and surface water systems.

The Source Water Assessment Program (SWAP) involves determining the boundaries of the areas that are the source of waters for public water systems. For groundwater systems, these areas are defined using groundwater flow models. For surface water systems, the 14-digit Hydrologic Unit Code watershed is the designated protection area (although certain areas within the basin will be segmented as being of greater vulnerability to contamination from overland flow, groundwater contributions to surface water, and direct spills into the surface water). Known and potential sources of contamination in the delineated area must be identified, and the inventoried sources evaluated to determine the susceptibility of public water systems to such contaminants. Assessments must be made available to the public.

Local involvement will be a critical factor in the success of the SWAP, and local government, citizen groups, environmental groups, water suppliers, and the Department must all work together to increase the general public's awareness of where drinking water comes from and how to better protect sources of drinking water. Implementation of source water protection activities will occur at the local level, and local authorities may wish to base zoning and land-use planning on the source water assessments. The SWAP will be a key part of the Department's watershed management approach. To avoid duplication, information gathered from existing regulatory programs and/or watershed protection efforts will be utilized (e.g., ambient monitoring programs, TMDLs, etc.).

Consumer Confidence Reports

The Consumer Confidence Report (CCR) is an annual water quality report required of all Community water systems. The rationale behind the CCR is that consumers have a right to know what is in their drinking water and where it comes from. These reports are to educate consumers and help them make informed choices that affect the health of themselves and their families. It is believed that educated consumers are more likely to protect their drinking water sources. All CCRs are to include the following basic components:

- the water source, its location, and the availability of source water assessment plan;

- information about the water system (name and telephone number of a contact person, opportunities for public participation, and information for non-English speaking populations if applicable);
- definitions of terms and abbreviations used in the report;
- table of detected contaminants including the known or likely source of the contaminants;
- the health effects language for Maximum Contaminant Level violations and an explanation of the violation;
- information on cryptosporidium, radon, and other contaminants if applicable; and
- educational information that includes an explanation of contaminants and their presence in drinking water, an advisory for immuno-compromised people, the Safe Drinking Water Hotline telephone number, and other statements about lead, arsenic, and nitrate if applicable.

Nonpoint Source Education

The goal of the Nonpoint Source Outreach Program is to educate the citizens of South Carolina about the sources of polluted runoff and techniques that can be used to reduce this runoff. The Program provides presentations on runoff pollution to community, church, civic, or professional groups; a variety of technical and nontechnical publications on runoff pollution and reduction techniques; *Turning the Tide*, a free Nonpoint Source newsletter; and teacher training that includes the *Action for a Cleaner Tomorrow* curriculum and information on reducing polluted runoff. To arrange a presentation, order publications, or ask questions, contact the Nonpoint Source Education coordinator at 803-898-4300 or visit our website.

South Carolina Water Watch

South Carolina Water Watch is a unique effort to involve the public and local communities in water quality protection. The Water Watch program was developed to encourage South Carolina's citizens to become stewards of the State's lakes, rivers, streams, estuaries, and wetlands. Volunteers select a water resource on which to focus and perform activities aimed at protecting water quality, such as shoreline surveys, public education, and litter cleanups. The Water Watch coordinator assists participants with materials and training to help make projects successful. SCDHEC invites individuals, school groups, civic organizations, businesses, and local governments to learn about and protect the quality of our waterways by contacting the Water Watch coordinator at 803-898-4300 or visit our website.

Champions of the Environment

Champions of the Environment is a student recognition program that raises awareness of environmental issues. Nationally recognized for its innovative approach to environmental education, the program promotes hands-on learning by recognizing students working on exemplary environmental projects beyond the realm of the classroom. With scholarships and media coverage, Champions of the Environment encourages student initiative and self-esteem. The program promotes environmental awareness, leadership, conservation, creativity, and self-confidence through activities such as group projects, public speaking, and environmental research. Champions of the Environment is jointly sponsored by Dupont, International Paper, WIS-TV, and SCDHEC. For more information contact the Champions of the Environment coordinator at 803-898-4300 or visit our website.

Clean Water State Revolving Fund

Congress created the Clean Water State Revolving Fund (SRF) in 1987, to replace the §201 Construction Grants program. In doing so, 'state banks' were created to lend money for virtually any type of water pollution control infrastructure project. Project types include construction of wastewater treatment systems and nonpoint source pollution control. The interest rate on the loans is always below the current market rate. As repayments are made on the loans, funds are recycled to fund additional water protection projects. The vast majority of the SRF funds have been used for the construction of traditional municipal wastewater treatment systems. Because of its inherent flexibility, the SRF program is well suited to accommodate the watershed approach.

SRF loans are available to units of state, local, and regional government, and special purpose districts. South Carolina law prevents loans from being made directly to private organizations and individuals. Local governments such as cities and counties and other units of government such as Soil and Water Conservation Districts, Councils of Government, and Water and Sewer Districts are encouraged to apply for SRF loans for nonpoint source projects. Nonpoint source projects may include construction and maintenance of stormwater management facilities, establishment of a stormwater utility, purchase of land for wetlands and riparian zones, and implementation of source water protection assessments. For more information, contact the State Revolving Fund coordinator at 803-898-4300 or visit our website.

Citizen-Based Watershed Stewardship Programs

Throughout the Santee River Basin, water quality is a common interest among citizen groups. The issues and membership of these groups vary widely. Some of the citizen groups interested in water quality in the Santee River Basin are described below.

Lake Marion Association
The Lake Marion Association is a non-profit corporation dedicated to enhancing the environmental and recreational quality of Lake Marion through cooperative efforts with local, state, and federal agencies.

St. Julien's Cove Homeowners Association
The St. Julien's Cove Homeowners Association has been involved in working with property owners in the surrounding watershed to reduce nutrient and other pollutants to the cove located on the southern shore of Lake Marion. Educational programs are held with shoreline property owners and engagement with the Santee Cooper Authority have been underway for solutions to the algae blooms that have formed intermittently in the cove over the years.

Coastal Conservation League (CCL)
The CCL is a grassroots organization with the primary goal of environmental protection of the South Carolina Coastal Zone. The organization is active in promotion of "smart growth" initiatives and other land use issues, wetlands protection, water quality, and a variety of other issues. A legislative liaison is active at the state level to promote environmentally sound public policy.

Ashley River Scenic River Task Force
As part of the S.C. Scenic Rivers Program, an advisory council was formed to develop a plan for managing the Ashley River Corridor. The advisory council, sponsored by the South Carolina Department of Natural Resources, is composed of local landowners, conservation organizations, business representatives, and natural resource agency personnel. The council will propose recommendations for managing the natural, cultural, recreational, and historical assets of the Ashley Scenic River area.

Ashley River Conservation Coalition
An organization formed to create a vision for the future of the Ashley River Historic District and to develop strategies for the achievement of the vision. Original members of the coalition were Drayton Hall, Middleton Place Foundation, Westvaco, SCPRT, Historic Charleston, and the Lowcountry Open Land Trust. The Coalition successfully petitioned for Scenic River status for the Ashley River.

Clean Water Council
A citizen-based watershed stewardship organization concerned with the water quality issues affecting the East Cooper River area including Mt. Pleasant, Sullivans Island, and The Isle of Palms. They are active in volunteer water quality monitoring for the identification of sources of runoff pollution.

Land Trusts
Both the Lord Berkeley Land Trust and Low Country Open Land Trust have been active in the Santee River basin. Efforts are geared towards acquiring property or easements for the preservation of natural areas.

Santee River Basin Description

The ***Santee River Basin*** encompasses 11 watersheds and 1,280 square miles. The Santee River Basin originates in the Upper Coastal Plain region of the State giving way to the Lower Coastal Plain and the Coastal Zone regions. Of the nearly one million acres, 47.6% is forested land, 14.4% is forested wetland, 13.6% is agricultural land, 11.2% is water, 7.8% is scrub/shrub land, 4.3% is nonforested wetland, 0.6% is barren land, and 0.5% is urban land. There are a total of 976 stream miles, 94,668 acres of lake waters, and 5,276 acres of estuarine areas in the Santee River Basin. The Santee River is formed from the confluence of the Congaree and Wateree Rivers and flows through Lake Marion. The river is diverted in lower Lake Marion, and either flows out of the Santee dam to eventually drain into the Atlantic Ocean via the South Santee River and the North Santee River, or is channeled along a 7.5 mile Diversion Canal to fill Lake Moultrie. After flowing through the Santee dam, the Santee River is joined by the Rediversion Canal connecting Lake Moultrie and the (lower) Santee River.

Physiographic Regions

The State of South Carolina has been divided into six Major Land Resource Areas (MLRAs) by the USDA Soil Conservation Service. The MLRAs are physiographic regions that have soils, climate, water resources, and land uses in common. The physiographic regions defining the Santee River Basin are as follows:

The **Upper Coastal Plain** is an area of gentle slopes with increased dissection and moderate slopes in the northwestern section that contain the State's major farming areas; elevations range from 100 to 450 feet.

The **Lower Coastal Plain** is an area that is mostly nearly level and is dissected by many broad, shallow valleys with meandering stream channels; elevations range from 25 to 125 feet.

The **Coastal Zone** is a mostly tidally-influenced area that is nearly level and dissected by many broad, shallow valleys with meandering stream channels; most of the valleys terminate in tidal estuaries along the coast; elevations range from sea level to about 25 feet.

Land Use/Land Cover

General land use/land cover mapping for South Carolina was derived from the U.S. Geological Survey's National Land Cover Data (NLCD), based on nationwide Landsat Thematic Mapper (TM) multispectral satellite images (furnished through the Multi-Resolution Land Characteristics (MRLC) consortium, coordinated by USEPA) using image analysis software to inventory the Nation's land classes. The NLCD are developed by the USGS (EROS Data Center) using TM image interpretation, air photo interpretation, National Wetland Inventory data analysis, and ancillary data analysis.

Urban land is characterized by man-made structures and artificial surfaces related to industrial, commercial, and residential uses, and vegetated portions of urban areas such as recreational grasslands and industrial facility lawns.

Agricultural/Grass land is characterized by row crops, pastures, orchards, vineyards, and hay land, and includes grass cover in fallow, scrub/shrub, forest clearcut and urban areas.

Forestland is characterized by deciduous and evergreen trees (or a mix of these), not including forests in wetland settings, generally greater than 6 meters (approximately 20 feet) in height, with tree canopy of 25-100% cover.

Forested Wetland is saturated bottomland, mostly hardwood, forests primarily composed of wooded swamps occupying river floodplains, moist marginal forests, and isolated low-lying wet areas, located predominantly in the Coastal Plain.

Nonforested Wetland is saturated marshland, most commonly located in coastal tidelands and in isolated freshwater inland areas, found predominantly in the Coastal Plain.

Barren land is characterized by a nonvegetated condition of the land, both natural (rock, beaches, nonvegetated flats) and man-induced (rock quarries, mines, and areas cleared for construction in urban areas or clearcut forest areas).

Water (non-land) includes both fresh (inland) and saline (tidal) waters.

Soil Types

The dominant soil associations, or those soil series comprising, together, over 40% of the land area, were recorded for each watershed in percent descending order. The individual soil series for the Santee River Basin are described as follows.

Bladen soils are poorly drained soils on low, nearly level areas and low ridges.

Bohicket soils are very poorly drained soils, clayey throughout or mucky and underlain with clayey layers, frequently flooded.

Bonneau soils are deep, moderately well drained soils with loamy subsoil on ridges.

Cantey soils are moderately well drained soils with a loamy surface layer and a clayey or loamy subsoil and poorly drained soils with a loamy surface layer and a clayey subsoil.

Capers soils are very poorly drained soils, clayey throughout or mucky, and underlain with clayey layers, frequently flooded.

Chastain soils are poorly drained to well drained soils that are clayey or loamy throughout and are subject to flooding.

Chipley soils are moderately to excessively well drained soils, sandy throughout, on high ridges.

Emporia soils are well drained, gently sloping soils with surface and subsoils of loamy fine sand.

Faceville soils are well drained, sandy soils with a loamy or clayey subsoil.
Goldsboro soils are moderately well to poorly drained soils with loamy subsoil on nearly level ridges and in shallow depressions.

Hobcaw soils are nearly level, very poorly drained soils in depressions.

Leon soils are somewhat poorly drained to poorly drained, level to nearly level, sandy soils with weakly cemented layers stained by organic matter.

Levy soils are nearly level, very poorly drained soils, mucky throughout or loamy and underlain with clayey layers, rarely or frequently flooded with fresh water.

Lynchburg soils are moderately well to poorly drained soils, with loamy subsoil, on nearly level ridges and in shallow depressions.

Marlboro soils are well drained soils with a sandy or loamy surface layer and a loamy or clayey subsoil.

Noboco soils are well drained, sandy soils with a loamy or clayey subsoil.

Pantego soils are moderately well drained and well drained soils with a sandy surface layer and a loamy subsoil, and very poorly drained soils that are loamy throughout.

Paxville soils are somewhat to very poorly drained soils, with loamy subsoil, on low ridges and in depressions.

Rains soils are moderately well to poorly drained soils, with a loamy subsoil, on nearly level ridges and in shallow depressions.

Rutledge soils are somewhat poorly drained to moderately well drained, nearly level, sandy soils on ridges and poorly drained to very poorly drained, sandy soils in depressions.

Tawcaw soils are poorly drained to well drained soils that are clayey or loamy throughout and are subject to flooding.

Wagram soils are well drained to very poorly drained, depressional to nearly level and gently sloping soils with a loamy to sandy surface layer and a clayey to loamy subsoil.

Wahee soils are poorly drained soils on low, nearly level areas and low ridges.

Yauhannah soils are poorly drained to moderately well drained soils with a loamy subsoil, on nearly level ridges and in shallow depressions.

Yemassee soils are poorly drained to moderately well drained soils with a loamy subsoil, on nearly level ridges and in shallow depressions.

Slope and Erodibility

The definition of soil erodibility differs from that of soil erosion. Soil erosion may be more influenced by slope, rainstorm characteristics, cover, and land management than by soil properties. Soil erodibility refers to the properties of the soil itself, which cause it to erode more or less easily than others when all other factors are constant.

The soil erodibility factor, K, is the rate of soil loss per erosion index unit as measured on a unit plot, and represents an average value for a given soil reflecting the combined effects of all the soil properties that significantly influence the ease of soil erosion by rainfall and runoff if not protected. K values closer to 1.0 represent higher soil erodibility and a greater need for best management practices to minimize erosion and contain those sediments that do erode. The range of K-factor values in the Santee River Basin is from 0.12 to 0.24.

Fish Consumption Advisory

At the time of publication, a fish consumption advisory issued by SCDHEC is in effect for Lake Marion, the Rediversion Canal, the Santee River (from the Lake Marion dam to the South Santee River), South Santee River (from the Santee River to US Hwy 17/701 bridge), North Santee River (from the

Santee River to U.S. Hwy 17/701 bridge), Wadmacon Creek, and Wambaw Creek advising people to limit the amount of some types of fish consumed from these waters. Fish consumption advisories are updated annually in March. For background information and the most current advisories please visit www.scdhec.gov/fish . For more information or a hard copy of the advisories, call SCDHEC's Division of Health Hazard Evaluation toll-free at (888) 849-7241.

Climate

Normal yearly rainfall in the Santee River area during the period of 1971 to 2000 was 51.28 inches, according to South Carolina's **30-year** climatological record. Data compiled from National Weather Service stations in Rimini, Georgetown, McClellanville, and at the Pinopolis Dam were used to determine the general climate information for this portion of the State. The highest seasonal rainfall occurred in the summer with 17.42 inches; 11.83, 11.44, and 10.59 inches of rain fell in the fall, winter, and spring, respectively. The average annual daily temperature was 64.4 °F. Winter temperatures averaged 48.9°F, spring temperatures averaged 63.5 °F and summer and fall mean temperatures were 79.4 °F and 65.9 °F, respectively.

Watershed Evaluations

03050111-010

(Santee River/Lake Marion)

General Description

Watershed 03050111-010 is located in Sumter, Clarendon, Calhoun, Orangeburg, and Berkeley Counties and consists primarily of the ***Santee River*** and its tributaries that flow into ***Lake Marion***. The watershed occupies 223,194 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Chastain-Cantey-Faceville-Goldsboro-Rains series. The erodibility of the soil (K) averages 0.24 and the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 34.0% water, 29.8% forested land, 16.7% agricultural land, 9.2% forested wetland, 8.5% scrub/shrub land, 0.7% nonforested wetland, 0.6% urban land, and 0.5% barren land.

The Congaree River and the Wateree River join to form the headwaters of the Santee River. The Santee River flows through Lake Marion and exits through the Santee Dam or through the Diversion Canal to fill Lake Moultrie. Before entering the impounded Lake Marion, the Santee River receives drainage from Broadwater Creek and the Santee Swamp receives drainage from Tavern Creek and Mill Creek. Streams draining into Lake Marion include Squirrel Creek, Warley Creek, Spring Grove Creek (Pine Tree Creek, Ballard Creek, Half Way Creek, Duckford Branch), Richardson Branch, the Halfway Swamp Creek watershed, Little Poplar Creek, Big Poplar Creek, the Jacks Creek watershed, Cantey Bay (Oyster Bay, Monkey Bay), Chapel Branch, Webbs Creek, Mill Creek, Savana Branch, the Tawcaw Creek watershed, Eutaw Creek, and the Potato Creek watershed. Additional natural resources in the watershed include the Santee State Park, near Big Poplar Creek, and the Santee National Wildlife Refuge, which extends over the northern shoreline from Jacks Creek-Cantey Bay area to the Santee Dam. The South Carolina Public Service Authority (Santee Cooper) oversees the operation of the lake with uses that include power generation and numerous forms of recreation (hunting, fishing, boating, swimming). There are a total of 160.8 stream miles and 89,011.7 acres of lake waters in this watershed, all classified FW.

Surface Water Quality

Station #	Type	Class	Description
SC-004	SC	FW	Upper Santee River 0.1 mi upstr mouth of Broadwater Creek
ST-527	BIO	FW	Tavern Creek at SR 808
C-014/SC-006	BIO/SC	FW	Warley Creek at SC 267
SC-058	SC	FW	Stream originating upstr of Safety Kleen haz landfill
SC-057	SC	FW	Surface drainage from Safety Kleen hazardous landfill
SC-005	SC	FW	Upper Lake Marion near Pack's Landing
ST-034	INT	FW	Lake Marion at RR trestle at Lone Star
RL-01002	RL01	FW	Lake Marion at RR trestle at Lone Star
SC-008	SC	FW	Lake Marion at RR trestle at Lone Star
ST-535/SC-009	BIO/SC	FW	Spring Grove Creek at SR 26 bridge
SC-039	SC	FW	Upper Lake Marion 1.25 mi below Rimini rr trestle
SC-044	SC	FW	Upper Lake Marion 0.3 mi NE of Stumphole Landing

SC-010	SC	FW	UPPER LAKE MARION AT CHANNEL MARKER 150
SC-012/RL-02306	SC/RL02	FW	LAKE MARION AT JACKS CREEK EMBAYMENT
SC-011	SC	FW	BIG POPLAR CREEK AT S-38-105 BRIDGE
SC-042	SC	FW	MID LAKE MARION AT NORTH END OF I-95/US 301 BRIDGES
SC-045	SC	FW	STREAM FLOWING THROUGH SANTEE NATL. GOLF COURSE POND AT HWY 6
SC-014	SC	FW	UPPER LAKE MARION AT HEADWATERS OF CHAPEL BRANCH FLOODED CREEK
ST-025/SC-015	W/SC	FW	LAKE MARION AT OLD US 301/15 BRIDGE AT SANTEE
RL-01016	RL01	FW	LAKE MARION 1.6 MI DIRECTLY SW OF I-95 BRIDGE (MIDDLE) OVER LAKE
RL-01001	RL01	FW	LAKE MARION 2.5 MI DIRECTLY SW OF I-95 BRIDGE (MIDDLE) OVER LAKE
RL-01031	RL01	FW	LAKE MARION 3.75 MI DIRECTLY SW OF I-95 BRIDGE (MIDDLE) OVER LAKE
SC-040	SC	FW	MID LAKE MARION AT CHANNEL MARKER 79
SC-041	SC	FW	MID LAKE MARION 2 MI N OF CHANNEL MARKER 79
SC-016/RL-02308	SC/RL02	FW	LAKE MARION AT CHANNEL MARKER 69
RL-02310	RL02	FW	LAKE MARION NEAR SANTEE NAT'L WILDLIFE REFUGE
SC-035/RL-01011	SC/RL01	FW	LK MARION, 1.1MI SSE OF SANTEE NATL WILDLIFE REF & 1MI S OF EAGLE PT
SC-021	SC	FW	LOWER LAKE MARION, 0.9 MI NE OF ROCKS POND CAMPGROUND
CL-042/SC-022	INT/SC	FW	LAKE MARION FOREBAY, SPILLWAY MARKER 44
RL-01021	RL01	FW	LAKE MARION, 3 MI WSW OF EADYTOWN IN SE CORNER OF THE LAKE

Santee River (SC-004) - Aquatic life and recreational uses are fully supported.

Tavern Creek (ST-527) - Aquatic life uses are fully supported based on macroinvertebrate community data.

Warley Creek (C-014/SC-006) - Aquatic life uses are fully supported based on macroinvertebrate community data. Recreational uses are not supported due to fecal coliform bacteria excursions.

Stream Upstream of Safety Kleen Pinewood (SC-058) - Aquatic life uses are not supported due to pH excursions. Recreational uses are fully supported.

Surface Drainage From Safety Kleen (SC-057) - Aquatic life and recreational uses are fully supported.

Lake Marion - There are thirteen SCDHEC monitoring sites in Lake Marion and there are fifteen South Carolina Public Service Authority - Santee Cooper (SCPSA) monitoring sites, many overlapping to provide greater coverage of a site. All lake sites were fully supported for recreational uses. Lake sites that are also fully supported for aquatic life uses include ***SC-005, SC-039, RL-02306/SC-012, SC-042, RL-01001, RL-01031, SC-040, SC-041, RL-02310, RL-01011/SC-035, SC-021, CL-042/SC-022***, and ***RL-01021***.

At the combined site of ***ST-034/RL-01002/SC-008***, aquatic life uses are not supported due to total phosphorus excursions. Aquatic life uses are partially supported at ***SC-044*** due to pH excursions and not supported at ***SC-010*** due to total phosphorus excursions. Aquatic life uses are not supported at ***SC-014,*** located in the Chapel Branch arm of the lake, due to excursions of pH, total phosphorus, total nitrogen, and chlorophyll-*a*. At the combined site of ***ST-025/ SC-015***, aquatic life uses are not supported due to total phosphorus excursions. There is also a significant decreasing trend in dissolved oxygen concentration. There is a significant decreasing trend in pH. A significant decreasing trend in five-day

biochemical oxygen demand suggests improving conditions for this parameter. Aquatic life uses are partially supported at ***RL-01016*** and ***RL-02308/ SC-016*** due to pH excursions.

Due to the shallow depth and high nutrient level of the lake, aquatic macrophytes have proliferated and public access has been restricted. Hydropower generation and recreation have been impaired by the plants. Treatment measures have included aquatic herbicides and/or grass carp stocking since 1989 to the present. Aquatic herbicide continues to be applied to upper, mid, and lower lake regions to reduce problem plant populations and to reduce impacts to public accesses, recreational uses, irrigation withdrawals, navigation, and water quality. Some of the areas recently treated include the Santee State Park Swimming Lake (2001, 2004, 2005), Church Branch Impoundment (2001-2004), Fountain Lake (2001-2004), and Dean Swamp Impoundment (2001-2004).

Spring Grove Creek (ST-535/SC-009) – Aquatic life uses are fully supported based on macroinvertebrate community data. Recreational uses are not supported due to fecal coliform bacteria excursions.

Big Poplar Creek (SC-011) - Aquatic life uses are fully supported, but recreational uses are not supported due to fecal coliform bacteria excursions.

Chapel Branch (SC-045) - Aquatic life and recreational uses are fully supported.

A fish consumption advisory has been issued by the Department for mercury and includes Lake Marion within this watershed (see advisory p.39).

Natural Swimming Areas

FACILITY NAME	***PERMIT #***
RECEIVING STREAM	***STATUS***
CAMP MAC BOYKIN	43-N04
LAKE MARION	ACTIVE
ROCKS POND	38-N06
LAKE MARION	ACTIVE
SPIERS LANDING	08-N05
LAKE MARION	ACTIVE
SANTEE STATE PARK	38-N04
LAKE MARION	ACTIVE

Groundwater Quality

Well #	Class	Aquifer	Location
AMB-003	GB	BLACK CREEK	ELLOREE

NPDES Program

Active NPDES Facilities

RECEIVING STREAM / ***FACILITY NAME*** / ***PERMITTED FLOW @ PIPE (MGD)***	***NPDES#*** / ***TYPE*** / ***COMMENT***
LAKE MARION PINEWOOD SITE-HILLS/LABRUCE MINE PIPE #: 001 FLOW: M/R	SCG730026 MINOR INDUSTRIAL
LAKE MARION PINEWOOD CUSTODIAL TRUST PIPE #: 001, 002, 02A FLOW: M/R	SC0042170 MINOR INDUSTRIAL (GSX; LAIDLAW; SAFETY-KLEEN)
LAKE MARION TRIBUTARY MARTIN MARIETTA/BERKELEY QUARRY PIPE #: 001 FLOW: M/R	SCG730058 MINOR INDUSTRIAL
BALLARD CREEK TOWN OF PINEWOOD WWTP PIPE #: 001 FLOW: 0.134	SC0046868 MINOR DOMESTIC

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME / ***FACILITY TYPE***	***PERMIT #*** / ***STATUS***
DUKE POWER CO. INDUSTRIAL	463303-1601 (IWP-192, IWP-128) ACTIVE
JF CLECKLEY & CO./PLT #4 INDUSTRIAL	IWP-025, IWP-023 ---------
JF CLECKLEY & CO./PLT #6 INDUSTRIAL	IWP-060 ---------
LAIDLAW ENVIR. SERVICES HAZARDOUS WASTE	IWP-145 ACTIVE

Land Application Sites

LAND APPLICATION SYSTEM / ***FACILITY NAME***	***ND#*** / ***TYPE***
SPRAYFIELD TOWN OF ELLOREE	ND0067628 DOMESTIC
TILEFIELD LAKE MARION RESORT & MARINA	ND0067610 DOMESTIC
SPRAY ON GOLF COURSE SANTEE PSD	ND0065676 DOMESTIC
ABSORPTION FIELD SANTEE RESORT HOTEL WWTP	ND0067652 DOMESTIC

TILEFIELD	ND0067326
SANTEE LAKES CAMPGROUND	DOMESTIC
SPRAYFIELD	ND0062227
CYPRESS POINT CONDO	DOMESTIC
LOW PRESSURE IRRIGATION SITE	ND0067920
SCDPRT/SANTEE STATE PARK	DOMESTIC

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
S.C. WATERFOWL ASSOC. (SAFETY KLEEN)	0712-27
MINGO MINE #4	CLAY
KESTREL HORIZONS (SAFETY KLEEN)	1014-27
HILLS-LABRUCE	CLAY
LAFORGE MATERIALS, INC.	1069-17
MCCURRY PIT	CLAY

Growth Potential

There is a moderate potential for growth in this watershed, which contains portions of the Towns of Pinewood, Elloree, Santee, Vance, and Eutawville due primarily to the Lake Marion related factors of fishery tourism, new lakeside subdivisions, marinas, landings, and camping facilities. There is also a potential for residential, commercial, and industrial growth around the interchanges of I-95 at the Town of Santee and with U.S. Hwy. 301 and U.S. Hwy. 15.

Watershed Restoration and Protection

Special Projects

Santee Cooper FERC Relicensing

Hydroelectric projects require licenses issued by the Federal Energy Regulatory Commission in order to operate. These licenses require re-evaluation periodically in order to incorporate new information for the protection of the common good and typically last from 30 to 50 years. In addition to economic factors, a wide variety of natural resource elements can be considered including: reservoir water quality, downstream water quality, fisheries issues, flow issues, and shoreline management issues. State and federal agencies as well as citizens and nonprofit groups have been meeting to discuss these issues in the Santee Cooper re-licensing process. All federal permits, which have any bearing on waters of the state, must first receive a §401 water quality certification. The §401 water quality certification will be SCDHEC's main responsibility in the process. For more information on Santee Cooper's re-licensing, view their website at: http://www.santeecooper.com/environment/ferc/index.html.

03050111-020

(Halfway Swamp Creek)

General Description

Watershed 03050111-020 is located in Calhoun County and consists primarily of ***Halfway Swamp Creek*** and its tributaries. The watershed occupies 45,985 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Wagram-Faceville-Marlboro-Noboco series. The erodibility of the soil (K) averages 0.15 and the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 48.4% forested land, 31.2% agricultural land, 9.6% forested wetland, 5.5% scrub/shrub land, 3.4% urban land, 1.2% barren land, and 0.7% water.

Halfway Swamp Creek originates near the Town of St. Matthews and drains into the upper reaches of Lake Marion. Before entering Lake Marion, Halfway Swamp Creek receives drainage from Lake Inspiration, located in downtown St. Matthews, Furlick Branch, Lyons Creek (Antley Springs Branch, Bell Branch), and Hutto Pond. There are a total of 57.4 stream miles and 400.0 acres of lake waters in this watershed, all classified FW.

Surface Water Quality

Station #	Type	Class	Description
C-058	S/W	FW	LAKE INSPIRATION - ST MATTHEWS (FRONT OF HEALTH DEPT.
C-063	S/W	FW	HALFWAY SWAMP CREEK AT S-09-43, 3 MI E OF ST MATTHEWS
ST-533	BIO	FW	LYONS CREEK AT SC 6
ST-534	BIO	FW	HALFWAY SWAMP CREEK AT SR157
C-015/SC-007	INT/SC	FW	HALFWAY SWAMP CREEK AT SC 33
CW-241	W	FW	HALFWAY SWAMP CREEK AT S-09-72
CW-242	W/I	FW	HALFWAY SWAMP CREEK TRIBUTARY AT S-09-158
SC-038	SC	FW	UPPER LAKE MARION AT MOUTH OF HALFWAY SWAMP CREEK

Lake Inspiration (C-058) **-** Aquatic life uses are not supported due to excursions of dissolved oxygen, pH, turbidity, total phosphorus, and total nitrogen. In addition, there are significant increasing trends in turbidity and total phosphorus concentration. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Halfway Swamp Creek – There are four SCDHEC monitoring sites along Halfway Swamp Creek. At the furthest upstream site ***(C-063)***, aquatic life uses are fully supported and a significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported at this site due to fecal coliform bacteria excursions, which are compounded by a significant increasing trend in fecal coliform bacteria concentration. Aquatic life uses are partially supported at ***ST-534*** based on macroinvertebrate community data.

Further downstream ***(C-015/SC-007)***, aquatic life uses are fully supported, but recreational uses

are not supported due to fecal coliform bacteria excursions. At the furthest downstream site ***(CW-241)***, aquatic life uses are fully supported. There is a significant increasing trend in pH. Recreational uses are not supported due to fecal coliform bacteria excursions.

Lyons Creek (ST-534) - Aquatic life uses are partially supported based on macroinvertebrate community data.

Halfway Swamp Creek Tributary (CW-242) - Aquatic life and recreational uses are fully supported.

Halfway Swamp Creek arm of Lake Marion (SC-038) - Aquatic life uses are not supported due to total phosphorus excursions. Recreational uses are fully supported. (This station is mapped in 03050111-010).

A fish consumption advisory has been issued by the Department for mercury and includes portions of Lake Marion within this watershed (see advisory p.39).

Groundwater Quality

Well #	Class	Aquifer	Location
AMB-025	GB	BLACK MINGO	ST. MATTHEWS

NPDES Program

Active NPDES Facilities

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)*	*NPDES#* *TYPE* *COMMENT*
ANTLEY SPRINGS BRANCH TOWN OF ST MATTHEWS/SOUTH PLANT PIPE #: 001 FLOW: 0.55	SC0028801 MINOR DOMESTIC

Growth Potential

There is a low potential for growth in this watershed, with the exception of the northwestern corner around the Town of St. Matthews. The widening of US 601 from the Orangeburg County line to downtown St. Matthews may provide future growth to the area.

03050111-030

(Jacks Creek)

General Description

Watershed 03050111-030 is located in Clarendon County and consists primarily of ***Jacks Creek*** and its tributaries. The watershed occupies 24,269 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Faceville-Marlboro-Noboco-Bonneau-Cantey series. The erodibility of the soil (K) averages 0.15 and the slope of the terrain averages 5%, with a range of 0-10%. Land use/land cover in the watershed includes: 47.5% agricultural land, 36.5% forested land, 11.5% scrub/shrub land, 1.9% forested wetland, 1.3% water, 1.2% barren land, and 0.1% nonforested wetland.

Jacks Creek accepts drainage from Belser Creek (Chapel Creek), Sullivans Branch, and Big Branch (Spring Branch) before flowing into Lake Marion. There are a total of 43.3 stream miles and 426.1 acres of lake waters in this watershed, all classified FW. The Santee National Wildlife Refuge is an additional natural resource in the watershed.

Surface Water Quality

Station #	Type	Class	Description
CW-243/SC-047	W/INT/SC	FW	BIG BRANCH AT S-14-41
CW-244/SC-013	W/INT/SC	FW	JACKS CREEK AT S-14-76

Big Branch (CW-243/SC-047) – Aquatic life uses are not supported due to dissolved oxygen excursions. This is a blackwater system, characterized by naturally low pH conditions. Although pH excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. A significant decreasing trend in turbidity suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions.

Jacks Creek (CW-244/SC-013) - Aquatic life uses are fully supported. This is a blackwater system, characterized by naturally low dissolved oxygen conditions. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. Significant decreasing trends in five-day biochemical oxygen demand and turbidity suggest improving conditions for these parameters. Recreational uses are fully supported.

A fish consumption advisory has been issued by the Department for mercury and includes portions of Lake Marion within this watershed (see advisory p.39).

Nonpoint Source Management Program

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
STUKES MINING STUKES MINE	0990-27 SAND/CLAY

Growth Potential

There is a low potential for growth in this watershed. There is a small portion of lakeshore, but the lack of water or sewer services in the area will limit significant growth.

03050111-040

(Tawcaw Creek)

General Description

Watershed 03050111-040 is located in Clarendon County and consists primarily of ***Tawcaw Creek*** and its tributaries. The watershed occupies 26,471 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Noboco-Bonneau-Cantey-Paxville series. The erodibility of the soil (K) averages 0.17 and the slope of the terrain averages 3%, with a range of 0-10%. Land use/land cover in the watershed includes: 36.4% agricultural land, 34.8% forested land, 16.8% scrub/shrub land, 6.8% water, 4.1% forested wetland, 0.8% barren land, 0.2% nonforested wetland, and 0.1% urban land.

Tawcaw Creek accepts the drainage from Little Tawcaw Creek and Penn Branch before flowing into Lake Marion. There are a total of 53.3 stream miles and 1,785.3 acres of lake waters in this watershed, all classified FW. The Santee National Wildlife Refuge is an additional natural resource in the watershed.

Surface Water Quality

Station #	Type	Class	Description
ST-018/SC-018	S/INT/SC	FW	TAWCAW CREEK AT S-14-127 3.2 MI S OF SUMMERTON
SC-017	SC	FW	MID LAKE MARION AT TAWCAW CREEK EMBAYMENT
SC-036	SC	FW	MID LAKE MARION AT MOUTH OF TAWCAW CREEK

Tawcaw Creek (ST-018/SC-018) – Aquatic life uses are not supported due to dissolved oxygen excursions, which are compounded by a significant decreasing trend in dissolved oxygen concentration. There is also a significant increasing trend in five-day biochemical oxygen demand. There is a significant increasing trend in pH. Recreational uses are not supported due to fecal coliform bacteria excursions.

Tawcaw Creek Arm of Lake Marion – There are two SCPSA monitoring sites in the Tawcaw Creek arm of the lake (SC-017, SC-036), and aquatic life and recreational uses are fully supported at both sites. SC-036 is mapped in 03050111-010. Aquatic macrophytes have proliferated and public access has been restricted in Taw Caw Creek due to shallow depth and high nutrient levels. To abate aquatic plant growth in this area of the lake, aquatic herbicides have been applied several times since 1989. Aquatic herbicide has been applied more recently (1999-2004) to reduce problem plant populations and to reduce impacts to public accesses, recreational uses, irrigation withdrawals, navigation, and water quality.

A fish consumption advisory has been issued by the Department for mercury and includes portions of Lake Marion within this watershed (see advisory p.39).

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME / *FACILITY TYPE*	*PERMIT #* / *STATUS*
OLD SUMMERTON LANDFILL	------
--------	CLOSED

Land Application Sites

LAND APPLICATION SYSTEM / *FACILITY NAME*	*ND#* / *TYPE*
SPRAYFIELD	ND0063401
TOWN OF SUMMERTON	DOMESTIC
SPRAYFIELD	ND0067318
GOAT ISLAND W&S	DOMESTIC
SPRAY IRRIGATION	ND0066117
SIGFIELD/FOXBORO GOLF COURSE	DOMESTIC

Growth Potential

There is a low to moderate potential for growth in this watershed, which contains the Town of Summerton and a small portion of lakeshore.

03050111-050

(Potato Creek)

General Description

Watershed 03050111-050 is located in Clarendon County and consists primarily of ***Potato Creek*** and its tributaries. The watershed occupies 31,658 acres of the Upper Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Noboco-Bonneau-Paxville-Rutledge series. The erodibility of the soil (K) averages 0.15 and the slope of the terrain averages 2%, with a range of 0-10%. Land use/land cover in the watershed includes: 42.1% forested land, 27.2% agricultural land, 17.8% scrub/shrub land, 6.8% forested wetland, 5.7% water, 0.2% barren land, and 0.2% nonforested wetland.

Potato Creek accepts the drainage of Wyboo Swamp, Church Branch, and Big Branch as it forms an arm of Lake Marion. Wyboo Swamp is formed from the drainage of Dean Swamp, Buckhead Branch, McCoys Branch, Rooty Branch, Bluff Branch, White Oak Branch (Three Hole Swamp), Birch Branch, White Oak Creek, Lizzies Branch (Clubhouse Branch) and Carroll Slough. There are a total of 59.1 stream miles and 1,719.9 acres of lake waters in this watershed, all classified FW. The Santee National Wildlife Refuge extends over a large portion of the watershed.

Surface Water Quality

Station #	Type	Class	Description
ST-035/SC-020	INT/SC	FW	POTATO CREEK AT S-14-127, 3.2 MI S OF SUMMERTON
SC-019	SC	FW	LOWER LAKE MARION AT POTATO CREEK FLOODED EMBAYMENT
SC-023	SC	FW	LOWER LAKE MARION AT WYBOO CREEK FLOODED EMBAYMENT
RS-01051	RS01	FW	WHITE OAK CREEK AT COUNTY RD 345, 4.5 MI ESE OF SUMMERTON
ST-036/SC-023A	INT/SC	FW	LAKE MARION, WYBOO CREEK ARM DOWNSTREAM OF CLUBHOUSE BRANCH
ST-024	P/I	FW	LAKE MARION AT END OF S-14-64 AT CAMP BOB COOPER

Potato Creek (ST-035/SC-020) - Aquatic life uses are not supported due to dissolved oxygen and pH excursions. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Potato Creek Arm of Lake Marion (SC-019) - Aquatic life and recreational uses are fully supported. Aquatic macrophytes have proliferated and public access has been restricted in Potato Creek due to shallow depth and high nutrient levels. To abate aquatic plant growth in this area of the lake, aquatic herbicides have been applied several times since 1989. Aquatic herbicide has been applied more recently (1999-2004) to reduce problem plant populations and to reduce impacts to public accesses, recreational uses, irrigation withdrawals, navigation, and water quality.

Wyboo Creek Arm of Lake Marion – There are three monitoring sites (SCDHEC and SCPSA) in the Wyboo Creek arm of the lake ***(SC-023, ST-036/SC-023A, ST-024)***, and aquatic life and recreational uses are fully supported at all sites. At ***ST-024,*** there is a significant decreasing trend in dissolved oxygen concentration. Significant decreasing trends in total nitrogen concentration and fecal coliform bacteria concentration suggest improving conditions for these parameters at this site.

White Oak Creek (RS-01051) - Aquatic life uses are fully supported, but recreational uses are partially supported due to fecal coliform bacteria excursions.

A fish consumption advisory has been issued by the Department for mercury and includes portions of Lake Marion within this watershed (see advisory p.39).

Natural Swimming Areas

FACILITY NAME	***PERMIT #***
RECEIVING STREAM	***STATUS***
RM COOPER 4H CENTER	14-N01
LAKE MARION	ACTIVE

Nonpoint Source Management Program

Land Disposal Activities

Land Application Sites

LAND APPLICATION SYSTEM	***ND#***
FACILITY NAME	***TYPE***
SPRAY ON GOLF COURSE	ND0072427
WYBOO PLANTATION/PHASE II	DOMESTIC

Growth Potential

There is a moderate potential for continued residential and commercial development along this section of lakeshore, which includes several new subdivisions and golf courses. The watershed also contains the Clarendon County Airport.

03050112-010

(Santee River)

General Description

Watershed 03050112-010 is located in Clarendon, Williamsburg, and Berkeley Counties and consists primarily of the ***Santee River*** and its tributaries downstream of Lake Marion to Crawl Creek (Rediversion canal). The watershed occupies 120,847 acres of the Upper and Lower Coastal Plain regions of South Carolina. The predominant soil types consist of an association of the Chastain-Tawcaw-Lynchburg-Emporia series. The erodibility of the soil (K) averages 0.24 and the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 45.4% forested land, 28.8% forested wetland, 14.5% agricultural land, 10.2% scrub/shrub land, 0.7% water, and 0.4% barren land.

This segment of the Santee River flows out of the Santee Dam of Lake Marion and incorporates the drainage of the Little River, the Dead River, Highland Creek (Hicks Branch, Meetinghouse Branch, Bennetts Branch), Doctors Branch (Torkiln Branch, Mill Branch), Mt. Hope Swamp (Hagan Branch, Long Branch, Junkyard Bay, Guise Bay, Little Junkyard Bay, Cypress Bay), Campbell Branch, Walnut Branch, and Johns Run. There are a total of 188.0 stream miles and 444.6 acres of lake waters in this watershed, all classified FW. The oxbow lakes include Couturier Lake, Cordes Lake, Solomon Lake, Little Solomon Lake, Wood Lake, and Maham Lake.

Surface Water Quality

Station #	Type	Class	Description
SC-024	SC	FW	SANTEE RIVER AT WILSONS LANDING BELOW SPILLWAY DAM
ST-537	BIO	FW	DOCTOR BRANCH AT SR 48
ST-536	BIO	FW	BENNETTS BRANCH AT SR 351
ST-016	P/INT	FW	SANTEE RIVER AT US 52, 6.5 MI NNW OF ST. STEPHENS

Santee River – There is one SCPSA monitoring site and one SCDHEC site along this section of the Santee River. At the upstream site ***(SC-024)***, aquatic life and recreational uses are fully supported. At the downstream site ***(ST-016)***, aquatic life uses are fully supported; however, there is a significant increasing trend in turbidity. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration suggest improving conditions for these parameters. There is a significant increasing trend in pH. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Doctor Branch (ST-537) – Aquatic life uses are partially supported based on macroinvertebrate community data.

Bennetts Branch (ST-536) – Aquatic life uses are partially supported based on macroinvertebrate community data.

A fish consumption advisory has been issued by the Department for mercury and includes the Santee River within this watershed (see advisory p.39).

NPDES Program

Active NPDES Facilities

RECEIVING STREAM	***NPDES#***
FACILITY NAME	***TYPE***
PERMITTED FLOW @ PIPE (MGD)	***COMMENT***
SANTEE RIVER	SC0048097
WILLIAMSBURG CO. W&SA/SANTEE RIVER WWTP	MINOR DOMESTIC
PIPE #: 001 FLOW: 0.50	

Growth Potential

There is a low potential for growth projected in this watershed, which contains a portion of the Town of Greeleyville and is occupied largely by the Santee National Wildlife Refuge.

03050112-020

(Rediversion Canal)

General Description

Watershed 03050112-020 extends through Berkeley County and consists primarily of the ***Rediversion Canal (Crawl Creek)*** and its tributaries. The watershed occupies 23,426 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Chastain-Tawcaw-Pantego-Noboco-Bonneau series. The erodibility of the soil (K) averages 0.15 and the slope of the terrain averages 2%, with a range of 0-6%. Land use/land cover in the watershed includes: 37.3% forested land, 18.9% scrub/shrub land, 17.0% agricultural land, 12.9% forested wetland, 5.8% water, 4.3% barren land, and 3.8% urban land.

The 11.5 mile Rediversion Canal connects Lake Moultrie with the lower Santee River near the Town of St. Stephen. Mattassee Lake accepts drainage from Crawl Creek (Lifeland Branch, Big Bay Branch) and Curriboo Branch before entering the Rediversion Canal. Also draining into the canal are Ponteaux Branch and Mattassee Branch. There are a total of 36.4 stream miles and 10.7 acres of lake waters in this watershed, all classified FW. An additional natural resource is the Francis Marion National Forest, which extends over the base of the watershed.

Surface Water Quality

Station #	Type	Class	Description
SC-037	SC	FW	REDIVERSION CANAL AT SC 45 BRIDGE
ST-031/SC-037A	P/INT/SC	FW	REDIVERSION CANAL AT US 52

Rediversion Canal – There are two monitoring sites (SCPSA, SCDHEC) along the Rediversion Canal. Aquatic life and recreational uses are fully supported at the upstream site ***(SC-037)***. Aquatic life uses are also fully supported at the downstream site ***(ST-031/SC-037A)***, and significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration suggest improving conditions for these parameters. There is a significant increasing trend in pH. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

A fish consumption advisory has been issued by the Department for mercury and includes the Rediversion Canal within this watershed (see advisory p.39).

Groundwater Quality

Well #	Class	Aquifer	Location
AMB-021	GB	BLACK CREEK/MIDDENDORF	ST. STEPHEN

NPDES Program

Active NPDES Facilities

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)*	*NPDES#* *TYPE* *COMMENT*
REDIVERSION CANAL US ARMY/ST. STEPHEN POWER PLANT PIPE #: 001 FLOW: M/R	SC0047937 MINOR INDUSTRIAL
REDIVERSION CANAL GA PACIFIC RESINS/RUSSELVILLE/CHEM PIPE #: 001 FLOW: M/R	SCG250181 MINOR INDUSTRIAL
REDIVERSION CANAL GA PACIFIC CORP./RUSSELVILLE/PARTICLE PIPE #: 01A, 01B FLOW: M/R	SCG250179 MINOR INDUSTRIAL
CURRIBOO BRANCH ALBANY INTNL/PRESS FABRIC PIPE #: 001-003 FLOW: M/R	SC0002569 MINOR INDUSTRIAL

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
GA PACIFIC CORP. CHEM. INDUSTRIAL	083304-1601 (IWP-078, CWP-026) ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
DAVID & RALPH WOODWARD OLD FIELD MINE	0929-15 SAND/CLAY

Growth Potential

There is a low to moderate potential for growth in this watershed, which contains the Town of St. Stephen and portions of the communities of Pineville and Russellville. The Town of St. Stephen has both water and sewer services available, which may aid in attracting development to the area. Another source of potential growth is U.S. Hwy. 52, which is scheduled to be widened to four lanes.

03050112-030

(Santee River)

General Description

Watershed 03050112-030 is located in Williamsburg, Berkeley, and Georgetown Counties and consists primarily of the ***Santee River*** and its tributaries from the Rediversion Canal to Wadmacon Creek. The watershed occupies 137,119 acres of the Lower Coastal Plain and Coastal Zone regions of South Carolina. The predominant soil types consist of an association of the Chastain-Bladen-Wahee-Tawcaw-Hobcaw series. The erodibility of the soil (K) averages 0.17 and the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 63.2% forested land, 24.4% forested wetland, 5.3% scrub/shrub land, 5.3% agricultural land, 1.0% water, 0.4% nonforested wetland, 0.3% barren land, and 0.1% urban land.

This lowest segment of the Santee River accepts the upstream river drainage together with Wedboo Creek (Meeting House Branch, Beauford Branch), Savanna Creek, Byno Creek, Wittee Lake (June Branch), Wittee Branch (Mill Creek), and Ferry Lake. Further downstream, Dutart Creek, Echaw Creek (Bark Island Slough, Beaman Branch, Bay Branch, Pole Branch, June Pond), and Put-on Branch (Buck Branch) enter the river. Hell Hole Bay extends across the watershed near the headwaters of Dutart and Savanna Creeks. Velvet Branch and Red Bluff Creek flow into the river at the base of the watershed. There are a total of 180.9 stream miles and 148.7 acres of lake waters in this watershed, all classified FW. Additional natural resources include the Francis Marion National Forest, the Hell Hole Bay Wilderness Area, and the Guilliard Lake Scenic Area.

Surface Water Quality

Station #	Type	Class	Description
ST-001	P/INT	FW	SANTEE RIVER AT SC 41/US 17A NE OF JAMESTOWN
RS-02467	RS02	FW	ECHAW CREEK AT PITCH LANDING, FRANCIS MARION NATIONAL FOREST

Santee River (ST-001) – Aquatic life uses are fully supported. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration, and total nitrogen concentration, and a significant increasing trend in dissolved oxygen concentration suggest improving conditions for these parameters. There is a significant increasing trend in pH. Recreational uses are fully supported and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Echaw Creek (RS-02467) – Aquatic life uses are fully supported. This is a blackwater system, characterized by naturally low dissolved oxygen conditions. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. Recreational uses are not supported due to fecal coliform bacteria excursions. *A fish consumption advisory has been issued by the Department for mercury and includes the Santee River within this watershed (see advisory p.39).*

NPDES Program

Active NPDES Facilities

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)*	*NPDES#* *TYPE* *COMMENT*
SANTEE RIVER TOWN OF ST STEPHEN PIPE #: 001 FLOW: 0.9	SC0025259 MINOR DOMESTIC
SANTEE RIVER CHARGEURS WOOL (USA), INC. PIPE #: 001 FLOW: M/R	SC0000990 MAJOR INDUSTRIAL
DUTART CREEK MARTIN MARIETTA/GEORGETOWN II (SOUTHERN AGGR.) PIPE #: 001 FLOW: 10.8	SCG730059 MINOR INDUSTRIAL

Nonpoint Source Management Program

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
MARTIN MARIETTA MATERIALS, INC. GEORGETOWN II QUARRY	0885-15 LIMESTONE

Growth Potential

There is a low potential for growth in this watershed, which contains the Town of Jamestown and the communities of Alvin, Honey Hill, and Shulerville. Jamestown provides water, but there is no sewer service. The majority of the watershed extends over wetland (bays and swamps) areas.

03050112-040

(Wadmacon Creek)

General Description

Watershed 03050112-040 is located in Georgetown and Williamsburg Counties and consists primarily of ***Wadmacon Creek*** and its tributaries. The watershed occupies 42,927 acres of the Lower Coastal Plain and Coastal Zone regions of South Carolina. The predominant soil types consist of an association of the Bladen-Wahee-Levy-Chastain series. The erodibility of the soil (K) averages 0.15 and the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 63.9% forested land, 17.7% forested wetland, 9.9% scrub/shrub land, 5.2% nonforested wetland, 2.2% agricultural land, 0.9% barren land, 0.1% urban land, and 0.1% water.

Wadmacon Creek flows through Dawhoo Lake and receives drainage from Cedar Creek (Long Branch, Brunson Branch) before flowing into the South Santee River watershed. The Cutoff connects Wadmacon Creek and the Santee River watershed (03050112-030). There are a total of 60.7 stream miles and 59.7 acres of lake waters in this watershed, all classified FW.

Surface Water Quality

No monitoring occurred in this watershed.

A fish consumption advisory has been issued by the Department for mercury and includes Wadmacon Creek within this watershed (see advisory p.39).

Nonpoint Source Management Program

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
SHADER & SONS, INC. POWELL ROAD DIRT PIT	1548-43 SAND
BLACK RIVER GRADING & EXCAVATING LAMBERT PIT MINE	1536-43 SAND

Growth Potential

There is a low potential for growth in this watershed.

03050112-050

(Wambaw Creek)

General Description

Watershed 03050112-050 is located in Berkeley and Charleston Counties and consists primarily of ***Wambaw Creek*** and its tributaries. The watershed occupies 63,437 acres of the Lower Coastal Plain and Coastal Zone regions of South Carolina. The predominant soil types consist of an association of the Chipley-Yauhannah-Yemassee-Leon series. The erodibility of the soil (K) averages 0.12 and the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 87.2% forested land, 10.6% forested wetland, 1.9% nonforested wetland, 0.2% scrub/shrub land, and 0.1% barren land.

Wambaw Creek accepts drainage from Wambaw Swamp, Mechaw Creek, Mill Branch, and Cane Branch (Keepers Branch). Little Wambaw Swamp connects Wambaw Swamp and Mechaw Creek. Further downstream, Big Morgan Branch (Little Morgan Branch) enters Wambaw Creek and flows into the South Santee River. There are a total of 67.4 stream miles and 3.8 acres of lake waters, and 8.8 acres of estuarine areas in this watershed, all classified FW. An additional natural resource is the Francis Marion National Forest, which extends across the entire watershed. Located within the National Forest are the Wambaw Creek National Wilderness Area, the Wambaw Swamp National Wilderness Area, and the proposed Waterhorn Historic Area.

Surface Water Quality

Station #	Type	Class	Description
CSTL-112	W/INT	FW	WAMBAW CREEK AT EXTENTION OF S-10-857

Wambaw Creek (CSTL-112) – Aquatic life uses are fully supported; however, there is a significant increasing trend in turbidity. There is a significant increasing trend in pH. This is a blackwater system, characterized by naturally low dissolved oxygen conditions. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are partially supported due to fecal coliform bacteria excursions.

A fish consumption advisory has been issued by the Department for mercury and includes Wambaw Creek within this watershed (see advisory p.39).

Growth Potential

There is a low potential for growth projected for this watershed.

03050112-060

(North Santee River/South Santee River)

General Description

Watershed 03050112-060 is located in Charleston County and consists primarily of the ***South Santee River and the North Santee River*** and their tributaries. The watershed occupies 79,788 acres of the Coastal Zone region of South Carolina. The predominant soil types consist of an association of the Bohicket-Capers-Chipley series. The erodibility of the soil (K) averages 0.19 and the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 46.2% forested land, 36.8% nonforested wetland, 10.6% water, 4.5% forested wetland, 1.5% scrub/shrub land, 0.3% barren land, and 0.1% agricultural land.

The lower Santee River divides into the South Santee River and the North Santee River, both draining into the Atlantic Ocean. Both the South and North Santee Rivers are classified FW from their origin to the U.S. Hwy. 17 crossing, SA from the U.S. Hwy. 17 crossing to 1000 feet below the Atlantic Intracoastal Waterway (AIWW) crossing, and ORW from 1000 feet below the AIWW crossing to the Atlantic Ocean. The South Santee River accepts drainage from Chicken Creek, Hampton Creek (Cedar Creek), Montgomery Creek, Garfish Creek, Sixmile Creek, and Collins Creek. Pleasant Creek connects Sixmile Creek to the South Santee River. Fourmile Creek Canal and Alligator Creek also drain into the South Santee River. Sall Creek drains directly into the Atlantic Intracoastal Waterway (AIWW), which bisects the South and North Santee Rivers. This section of the AIWW is classified SFH.

The North Santee River accepts drainage from Cedar Creek, Pole Branch, Bonny Clabber Creek, White Oak Creek, and Sixmile Creek. Minim Creek drains into the North Santee River and into the North Santee Bay, and incorporates the drainage of Kinloch Creek (Bluff Creek), Pleasant Meadow Creek, Bella Creek, and Cork Creek. Atchison Creek and Fourmile Creek Canal drain directly into the river, and Little Duck Creek, Duck Creek, Big Duck Creek, Mosquito Creek, and Beach Creek drain into the North Santee Bay. Cane Creek connects the North Santee River to the North Santee Bay and Bird Bank Creek enters the river just before it flows into the Atlantic Ocean.

There are a total of 68.5 stream miles in this watershed, along with 657.1 acres of lake waters, and 5,266.9 acres of estuarine areas. Additional natural resources in the watershed include the Francis Marion National Forest (covering the southeastern portion of the watershed), several wildlife management areas, the Yawkey Center, and Hampton Plantation State Park.

Surface Water Quality

Station #	Type	Class	Description
ST-005	S/W	FW/SA	North Santee River at US 17
RT-01654	RT01	SA	Minim Creek, 9 mi S of Georgetown
RO-01122	RO01	ORW	Big Duck Creek, 9 mi S of Georgetown
MD-263	INT	ORW	Santee Bay at Beach Creek
RS-01056	RS01	FW	Cedar Creek at county rd 857, Hampton Plantation St Pk.
ST-006	P/INT	FW/SA	South Santee River at US 17
RO-02004	RT02	ORW	South Santee River, 1.1 mi NW of Atlantic Ocean

North Santee River (ST-005) – The water quality assessment for both the freshwater and saltwater classifications for this stream are identical. Aquatic life uses are fully supported and a significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. There is a significant increasing trend in pH. Recreational uses are fully supported.

Minim Creek (RT-01654) - Aquatic life uses are not supported due to turbidity excursions. Recreational uses are fully supported.

Big Duck Creek (RO-01122) - Aquatic life and recreational uses are fully supported. This is a blackwater system, characterized by naturally low dissolved oxygen conditions. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations.

Santee Bay (MD-263) - Aquatic life and recreational uses are fully supported.

Cedar Creek (RS-01056) - Aquatic life uses are fully supported. This is a blackwater system, characterized by naturally low dissolved oxygen conditions. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. Recreational uses are not supported due to fecal coliform bacteria excursions.

South Santee River - There are two SCDHEC monitoring sites along the South Santee River. The upstream site ***(ST-006)*** has both freshwater and saltwater classifications**.** The freshwater classification is not supported for aquatic life uses due to turbidity excursions, and the saltwater classification is fully supported. However, both classifications indicate significant increasing trends in turbidity. Both classifications indicate significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration suggesting improving conditions for these parameters. There is a significant increasing trend in pH with both classifications. Recreational uses are partially supported with both classifications, and are compounded by a significant increasing trend in fecal coliform bacteria concentration. The downstream site ***(RO-02004)*** is fully supported for aquatic life and recreational uses.

Aquatic macrophytes have proliferated and public access has been restricted in the Santee Delta Plantation Wildlife Management Area and the Santee Coastal Reserve. To abate aquatic plant growth and enhance waterfowl habitat in these areas, aquatic herbicides were applied in 2004 and 2005 to the Santee Delta, and in 1998, 1999, and 2002-2005 to the Coastal Reserve.

A fish consumption advisory has been issued by the Department for mercury and includes the North and South Santee Rivers within this watershed (see advisory p.39).

Groundwater Quality

Well #	Class	Aquifer	Location
AMB-087	GB	SURF SANDS	NORTH SANTEE

Shellfish Monitoring Stations

Station #	Description
06A-01	SOUTH SANTEE RIVER AT ALLIGATOR CREEK
06A-01A	SOUTH SANTEE RIVER NEAR THE MIDPOINT OF GRACE ISLAND
06A-02	SOUTH SANTEE INLET
06A-03	NORTH SANTEE RIVER AT BEACH CREEK
06A-04	NORTH SANTEE INLET
06A-04A	NORTH SANTEE BAY – E. OF CANE ISLAND
06A-04B	NORTH SANTEE RIVER - SW OF CANE ISLAND
06A-04C	NORTH SANTEE RIVER NEAR NORTHWESTERN TIP OF CANE ISLAND
06A-05	NORTH SANTEE RIVER AND MOSQUITO CREEK
06A-11	AIWW AT MINUM CREEK
06B-13	ALLIGATOR CREEK NEAREST SOUTH SANTEE RIVER BETWEEN MARKERS 24&25

NPDES Program

Active NPDES Facilities

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)*	*NPDES#* *TYPE* *COMMENT*
NORTH SANTEE RIVER GCW&SD NORTH SANTEE WWTP PIPE #: 001 FLOW: 0.052	SC0042439 MINOR DOMESTIC
NORTH SANTEE RIVER SCPSA/WINYAH STEAM IPE #: 002 FLOW: M/R	SC0022471 MAJOR INDUSTRIAL

Nonpoint Source Management Program

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
MCKENZIE BACKHOE & DOZIER SERVICE, INC. MCKENZIE MINE	1240-19 SAND
MCKENZIE BACKHOE & DOZIER SERVICE, INC. CHARLES CLARK MINE	1531-19 SAND
SHELLEYS LANDCLEARING TAYLOR POND MINE	1544-43 SAND

Growth Potential

There is a low potential for growth in this watershed.

Cooper River/ Ashley River Basin Description

The ***Cooper River Basin*** encompasses 8 watersheds and 845 square miles. The Cooper River Basin incorporates the Lower Coastal Plain and Coastal Zone regions. Of the half a million acres in the Cooper River Basin, 58.5% is forested land, 14.8% is water, 8.9% is forested wetland, 8.4% is urban land, 3.6% is scrub/shrub land, 2.8% is nonforested wetland, 2.7% is agricultural land, and 0.3% is barren land. The urban land is comprised chiefly of the greater City of Charleston area. There are a total of 587.2 stream miles in the Cooper River Basin, together with 60,191.6 acres of lake waters, and 13,059.6 acres of estuarine areas. The diverted Santee River flows through Lake Moultrie's Pinopolis Dam and joins Wadboo Creek to form the Cooper River. The Cooper River merges with Mepkin Creek to form the West Branch Cooper River, which then converges with the East Branch Cooper River to reform the Cooper River. The Cooper River then accepts drainage from the Back River, Goose Creek, and the Wando River before flowing into the Charleston Harbor and the Atlantic Ocean.

The ***Ashley River Basin*** incorporates 7 watersheds and 895 square miles. The Ashley River Basin consists of the Lower Coastal Plain and Coastal Zone regions of the State, and of the half a million acres in the basin, 53.7% is forested land, 15.7% is nonforested wetland, 9.9% is urban land, 7.7% is water, 4.8% is forested wetland, 4.5% is scrub/shrub land, 3.4% is agricultural land, and 0.3% is barren land. The urban land is comprised chiefly of the greater City of Charleston area. There are a total of 376.5 stream miles in the Ashley River Basin, together with 4,231.5 acres of lake waters, and 32,700 acres of estuarine areas. The Cypress Swamp drains into the Great Cypress Swamp, which joins with Hurricane Branch to form the Ashley River. The Ashley River accepts drainage from several streams including Dorchester Creek, and communicates with the Stono River by way of Elliot Cut before draining into the Charleston Harbor and the Atlantic Ocean. The Charleston Harbor also accepts drainage from a portion of the Atlantic Intracoastal Waterway (AIWW).

Physiographic Regions

The State of South Carolina has been divided into six Major Land Resource Areas (MLRAs) by the USDA Soil Conservation Service. The MLRAs are physiographic regions that have soils, climate, water resources, and land uses in common. The physiographic regions defining the Cooper River/Ashley River Basin are as follows:

The **Lower Coastal Plain** is an area that is mostly nearly level and is dissected by many broad, shallow valleys with meandering stream channels; elevations range from 25 to 125 feet.

The **Coastal Zone** is a mostly tidally-influenced area that is nearly level and dissected by many broad, shallow valleys with meandering stream channels; most of the valleys terminate in tidal estuaries along the coast; elevations range from sea level to about 25 feet.

Land Use/Land Cover

General land use/land cover mapping for South Carolina was derived from the U.S. Geological Survey's National Land Cover Data (NLCD), based on nationwide Landsat Thematic Mapper (TM) multispectral satellite images (furnished through the Multi-Resolution Land Characteristics (MRLC) consortium, coordinated by USEPA) using image analysis software to inventory the Nation's land classes. The NLCD are developed by the USGS (EROS Data Center) using TM image interpretation, air photo interpretation, National Wetland Inventory data analysis, and ancillary data analysis.

Urban land is characterized by man-made structures and artificial surfaces related to industrial, commercial, and residential uses, and vegetated portions of urban areas such as recreational grasslands and industrial facility lawns.

Agricultural/Grass land is characterized by row crops, pastures, orchards, vineyards, and hay land, and includes grass cover in fallow, scrub/shrub, forest clearcut and urban areas.

Forestland is characterized by deciduous and evergreen trees (or a mix of these), not including forests in wetland settings, generally greater than 6 meters (approximately 20 feet) in height, with tree canopy of 25-100% cover.

Forested Wetland is saturated bottomland, mostly hardwood, forests primarily composed of wooded swamps occupying river floodplains, moist marginal forests, and isolated low-lying wet areas, located predominantly in the Coastal Plain.

Nonforested Wetland is saturated marshland, most commonly located in coastal tidelands and in isolated freshwater inland areas, found predominantly in the Coastal Plain.

Barren land is characterized by a nonvegetated condition of the land, both natural (rock, beaches, nonvegetated flats) and man-induced (rock quarries, mines, and areas cleared for construction in urban areas or clearcut forest areas).

Water (non-land) includes both fresh (inland) and saline (tidal) waters.

Soil Types

The dominant soil associations, or those soil series comprising, together, over 40% of the land area, were recorded for each watershed in percent descending order. The individual soil series for the Cooper River/Ashley River Basin are described as follows.

Bladen soils are poorly drained soils on low, nearly level areas and low ridges.

Bohicket soils are very poorly drained soils, clayey throughout or mucky and underlain with clayey layers, frequently flooded.

Brookman soils are somewhat poorly drained to very poorly drained soils with a loamy surface layer and a loamy and clayey subsoil.

Capers soils are very poorly drained soils, clayey throughout or mucky, and underlain with clayey layers, frequently flooded.

Chipley soils are moderately to excessively well drained soils, sandy throughout, on high ridges.
Chisolm soils are deep, well to moderately drained soils with sandy to loamy subsoil on nearly level to gently sloping terrain.

Daleville soils are nearly level, poorly drained soils, with silty loam in slight depressions and drainage ways on upland terraces.

Foxworth soils are well drained, sandy marine sediment derived, with acidic soils.

Hobcaw soils are nearly level, very poorly drained soils in depressions.

Jedburg soils moderately well drained to poorly drained soils with a loamy surface layer and a thick, loamy subsoil that has a high silt content.

Kiawah soils are deep, somewhat poorly drained to poorly drained, acidic soils, sandy throughout, with a surface soil and subsoil of loamy fine sand.

Leon soils are somewhat poorly drained to poorly drained, level to nearly level, sandy soils with weakly cemented layers stained by organic matter.

Lynchburg soils are moderately well to poorly drained soils, with loamy subsoil, on nearly level ridges and in shallow depressions.

Meggett soils are poorly drained to very poorly drained, level to nearly level soils with a loamy to sandy surface layer and a loamy to clayey subsoil.

Mouzon soils are poorly drained, loamy and sandy soils with a loamy subsoil.

Rains soils are moderately well to poorly drained soils, with a loamy subsoil, on nearly level ridges and in shallow depressions.

Udipsamments soils are excessively drained, gently sloping to moderately steep, sandy soils that occur on long, narrow ridges.

Udorthents soils are mostly well drained soils forming in heterogeneous material from excavation or construction soil or refuse, or loamy, dredged material pumped onto low-lying marshy areas.

Wahee soils are poorly drained soils on low, nearly level areas and low ridges.

Yauhannah soils are poorly drained to moderately well drained soils with a loamy subsoil, on nearly level ridges and in shallow depressions.

Yemassee soils are poorly drained to moderately well drained soils with a loamy subsoil, on nearly level ridges and in shallow depressions.

Yonges soils are moderately well drained to poorly drained, nearly level soils with a sandy surface layer and a predominantly loamy subsoil.

Slope and Erodibility

The definition of soil erodibility differs from that of soil erosion. Soil erosion may be more influenced by slope, rainstorm characteristics, cover, and land management than by soil properties. Soil erodibility refers to the properties of the soil itself, which cause it to erode more or less easily than others when all other factors are constant.

The soil erodibility factor, K, is the rate of soil loss per erosion index unit as measured on a unit plot, and represents an average value for a given soil reflecting the combined effects of all the soil properties that significantly influence the ease of soil erosion by rainfall and runoff if not protected. K values closer to 1.0 represent higher soil erodibility and a greater need for best management practices to minimize erosion and contain those sediments that do erode. The range of K-factor values in the Cooper River/Ashley River Basin is from 0.12 to 0.28.

Fish Consumption Advisory

At the time of publication, a fish consumption advisory issued by SCDHEC is in effect for the Diversion Canal, Lake Moultrie, East Branch Cooper River (from Quinby Creek to the "T" or confluence with West Branch Cooper River), Tail Race Canal, Wadboo Creek, West Branch Cooper River, Cooper River, Durham Creek, Back River Reservoir, Goose Creek Reservoir, the Ashley River (from SR-165 to SC 526), and the Atlantic Ocean advising people to limit the amount of some types of fish consumed from these waters. Fish consumption advisories are updated annually in March. For background information and the most current advisories please visit the Bureau of Water homepage at http://www.scdhec.gov/water and click on "Advisories". For more information or a hard copy of the advisories, call SCDHEC's Division of Health Hazard Evaluation toll-free at (888) 849-7241.

Climate

Normal yearly rainfall in the Cooper River/Ashley River area during the period of 1971 to 2000 was 50.55 inches, according to South Carolina's **30-year** climatological record. Data compiled from National Weather Service stations in Givhans Ferry State Park, Charleston Airport, Charleston, Sullivans Island, Summerville, and at the Pinopolis Dam were used to determine the general climate information for this portion of the State. The highest seasonal rainfall occurred in the summer with 17.80 inches; 11.43, 10.89, and 10.43 inches of rain fell in the fall, winter, and spring, respectively. The average annual daily temperature was 65.0 °F. Summer temperatures averaged 79.4°F, fall temperatures averaged 65.9 °F, and winter and spring mean temperatures were 48.9 °F and 63.5 °F, respectively.

03050201-010

(Lake Moultrie)

General Description

Watershed 03050201-010 is located in Berkeley County and consists primarily of ***Lake Moultrie*** and its tributaries. The watershed occupies 87,730 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Yauhannah-Yemassee-Rains-Lynchburg series. The erodibility of the soil (K) averages 0.17 and the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 64.4% water, 21.1% forested land, 5.4% forested wetland, 4.1% urban land, 3.1% scrub/shrub land, 1.4% agricultural land, and 0.5% barren land.

Lake Moultrie was created by diverting the Santee River (Lake Marion) through a 7.5 mile Diversion Canal filling a levee-sided basin and impounding it with the Pinopolis Dam. South Carolina Public Service Authority (Santee Cooper) oversees the operation of Lake Moultrie, which is used for power generation, recreation, and water supply. The 4.5 mile Tail Race Canal connects Lake Moultrie with the Cooper River near the Town of Moncks Corner, and the Rediversion Canal connects Lake Moultrie with the lower Santee River. Duck Pond Creek enters the lake on its western shore. The Tail Race Canal accepts the drainage of California Branch and the Old Santee Canal. There are a total of 43.8 stream miles and 57,535.3 acres of lake waters in this watershed, all classified FW. Additional natural resources in the watershed include the Dennis Wildlife Center near the Town of Bonneau, Sandy Beach Water Fowl Area along the northern lakeshore, the Santee National Wildlife Refuge covering the lower half of the lake, and the Old Santee Canal State Park near Monks Corner.

Surface Water Quality

Station #	Type	Class	Description
CSTL-079/SC-025	P/W/SC	FW	Diversion Canal at SC 45 12.6 mi W of St. Stephens
SC-031	SC	FW	Northern Quadrant of Lake Moultrie at mouth of Rediversion Canal
SC-028	SC	FW	NW Quadrant of Lake Moultrie near Angel's Landing cove
SC-043	SC	FW	Tributary flowing to Lake Moultrie from Cross Generating Station
SC-026	SC	FW	Lake Moultrie trib 0.4 mi upstream of SC 6
SC-027	SC	FW	SW Quadrant of Lake Moultrie, 0.75 mi E of shoreline
SC-034	SC	FW	Duck Pond Creek at SC 6
RL-02328	RL02	FW	SW Lake Moultrie near Duck Pond Creek, approx. 2 mi E of Cross
RL-02322	RL02	FW	NE Lake Moultrie, 3 mi from Bonneau Beach
ST-037/SC-030	INT/SC	FW	Lake Moultrie at Channel Marker 17
RL-02454	RL02	FW	SW Lake Moultrie in open water
RL-01006	RL01	FW	Lk Moultrie, 5.5mi N of Moncks Corner & 1.5mi NW of Camp Moultrie
RL-01026	RL01	FW	Lk Moultrie, 4.5mi N of Moncks Corner, 1.5mi NNE of S-08-5 ending
SC-046	SC	FW	SE Quadrant of Lake Moultrie at Pinopolis embayment
SC-032	SC	FW	SE Quadrant of Lake Moultrie at Channel Marker 2
CSTL-062/SC-033	P/INT/SC	FW	Tailrace Canal at US 52 & 17A below Lake Moultrie

Diversion Canal (CSTL-079/SC-025) - Aquatic life uses are fully supported; however, there is a significant decreasing trend in dissolved oxygen concentration and a significant increasing trend in turbidity. A

significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are fully supported.

Lake Moultrie – There are eleven monitoring stations on Lake Moultrie, both SCDHEC and SCPSA sites (***SC-031, SC-028, SC-027, RL-02328, RL-02322, ST-037/SC-030, RL-02454, RL-01006, RL-01026, SC-046, SC-032***). Aquatic life and recreational uses are fully supported at all sites. Aquatic macrophytes have proliferated and public access has been restricted. Treatment measures have included aquatic herbicides and/or grass carp stocking since 1989 to the present. Aquatic herbicide continues to be applied to reduce problem plant populations, enhance waterfowl habitat, and to reduce impacts to public accesses, recreational uses, irrigation withdrawals, navigation, and water quality.

Lake Moultrie Tributary (SC-043) - Aquatic life uses are fully supported, but recreation uses are not supported due to fecal coliform bacteria excursions.

Lake Moultrie Tributary (SC-026) - Aquatic life uses are fully supported, but recreation uses are not supported due to fecal coliform bacteria excursions.

Duck Pond Creek (SC-034) - Aquatic life and recreational uses are fully supported.

Tail Race Canal (CSTL-062/SC-033)- Aquatic life uses are fully supported; however, there is a significant decreasing trend in dissolved oxygen concentration. There is a significant increasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are fully supported and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter

Old Santee Canal State Park Swimming Lake - The Lake has been treated annually from 1989 to 1998 with aquatic herbicides in an attempt to control aquatic macrophyte growth that has impaired the lake's recreational uses. In addition, *Tilapia* (200 fish/vegetated acre or 2,000 fish) and grass carp (15 fish/acre or 150 fish) were stocked in 1995, *Tilapia* (2,000 fish) were restocked in 1996, and grass carp (150 fish) were restocked in 1997.

A fish consumption advisory has been issued by the Department for mercury and includes the Diversion Canal, Lake Moultrie, and the Tail Race Canal within this watershed (see advisory p.69).

Natural Swimming Areas

FACILITY NAME	***PERMIT #***
RECEIVING STREAM	***STATUS***

SOMERSET POINT — 15-N06
LAKE MOULTRIE — ACTIVE

LIONS BEACH — 15-N01
LAKE MOULTRIE — ACTIVE

BERKELEY FAMILY YMCA — 15-1006N
LAKE MOULTRIE — ACTIVE

Groundwater Quality

Well #	Class	Aquifer	Location
AMB-053	GB	PEE DEE	MONCKS CORNER

NPDES Program

Active NPDES Facilities

RECEIVING STREAM — ***NPDES#***
FACILITY NAME — ***TYPE***
PERMITTED FLOW @ PIPE (MGD) — ***COMMENT***

DIVERSION CANAL — SC0037401
SCPSA/CROSS GENERATING STATION — MAJOR INDUSTRIAL
PIPE #: 003 FLOW: 0.079
PIPE #: 001,02A,02B,004 FLOW: M/R

LAKE MOULTRIE — SC0024708
US NAVY/SHORT STAY REC. FAC. — MINOR INDUSTRIAL
PIPE #: 001 FLOW: M/R

LAKE MOULTRIE — SC0027103
BERKELEY COUNTY/CROSS HIGH SCHOOL — MINOR DOMESTIC
PIPE #: 001 FLOW: 0.0158

TAIL RACE CANAL — SC0001091
SCPSA/JEFFERIES GENERATING STATION — MAJOR INDUSTRIAL
PIPE #: 001 FLOW: 0.006
PIPE #: 002 FLOW: 376
PIPE #: 003,004,006,007 FLOW: M/R

TAIL RACE CANAL — SC0035190
C.R. BARD, INC. — MAJOR INDUSTRIAL
PIPE #: 001 FLOW: 0.382

TAIL RACE CANAL — SCG641011
SCPSA/MONCKS CORNER WTP — MINOR DOMESTIC
PIPE #: 001 FLOW: M/R

DUCK POND CREEK — SC0034479
BERKELEY COUNTY/CROSS ELEM SCHOOL — MINOR DOMESTIC
IPE #: 001 FLOW: 0.015

Nonpoint Source Management Program

Mining Activities

MINING COMPANY — ***PERMIT #***
MINE NAME — ***MINERAL***

D&A PARTNERSHIP JOHN R. CUMBIE MINE	0747-15 SAND
DAVID WEEKS WEEKS MINE	1488-15 SAND

Land Disposal Activities

Landfill Facilities

LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
SCPSA/CROSS GENERATING STATION INDUSTRIAL	085801-1601 (083337-1601, IWP-186) ACTIVE
SCPSA/CROSS GENERATING STATION INDUSTRIAL	IWP-185 CLOSED
SCPSA C&D LANDFILL	083322-1201 (CWP-034) --------

Water Quantity

WATER USER ***STREAM***	***REGULATED CAPACITY (MGD)*** ***PUMPING CAPACITY (MGD)***
SANTEE COOPER REG. WTR. AUTH. LAKE MOULTRIE	36.0 38.0

Growth Potential

There is a moderate potential for growth in this watershed. Lake Moultrie contributes significantly to the growth in the area in terms of fishery tourism and residential development. The Towns of Monk Corner, Cross, and Bonneau should benefit from the lake-based growth. Monks Corner provides both water and sewer services and may encourage future growth. The Pinopolis peninsula has low density residential, including several historic structures, and a Santee Cooper semi-private recreation/conference center. There is a regional domestic water supply system on Lake Moultrie near Lions Beach (water withdrawn from Pinopolis cove) that serves the Berkeley County Water and Sewer Authority, Moncks Corner, Goose Creek, and the Summerville Public Service Area.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

Two TMDLs addressing dissolved oxygen were developed by SCDHEC for the ***Charleston Harbor Estuary:*** one covering the Ashley River and the other covering the Charleston Harbor, the Cooper River, and the Wando River. The Harbor/Cooper River/Wando River portion of the system (consisting of the Tail Race Canal, West Branch Cooper River, East Branch Cooper River, Shipyard Creek, Town Creek, Back River, Goose Creek, Wando River and Charleston Harbor) is not considered to be impaired with respect to dissolved oxygen (with the exception of the Wando River monitoring site MD-115); however, available information indicates much of the system does not meet the applicable water quality standard for dissolved

oxygen for significant periods of time and is considered water quality limited for the purposes of wasteload allocation (WLA) development. WLAs are an integral part of a TMDL, and although not always developed through the TMDL process, the Department and EPA have chosen to use the TMDL process to develop WLAs for the Charleston Harbor system (see following section). Results of a water quality model indicate the need for a 70% reduction in discharge of oxygen demanding substances to the overall system. A phased approach to achieving these reductions is proposed with an initial Phase I reduction of 60%. For more detailed information on TMDLs, please visit the SCDHEC's Bureau of Water homepage at http://www.scdhec.gov/water and click on "Watersheds and TMDLs" and then "TMDL Program".

Special Models

Charleston Harbor System TMDLs

The modeling efforts for Charleston Harbor and its tributaries have been completed and phased TMDLs for the Ashley and the Cooper systems have been issued by the Department and approved by EPA Region 4. Interim TMDL limits were included in NPDES permits for a number of dischargers while final TMDL limits were included for some dischargers who were already meeting the final limits. Permits included compliance schedules that allowed the opportunity for additional modeling work to be completed before compliance with final limits is required. A group of dischargers working through the local Councils of Government has initiated another modeling effort that is currently underway. If this effort is successfully completed within the allotted time, the existing TMDLs will be revised and, as appropriate, new limits incorporated into NPDES permits for discharges covered by the TMDL.

Special Projects

Santee Cooper FERC Relicensing

Hydroelectric projects require licenses issued by the Federal Energy Regulatory Commission in order to operate. These licenses require re-evaluation periodically in order to incorporate new information for the protection of the common good and typically last from 30 to 50 years. In addition to economic factors, a wide variety of natural resource elements can be considered including: reservoir water quality, downstream water quality, fisheries issues, flow issues, and shoreline management issues. State and federal agencies as well as citizens and nonprofit groups have been meeting to discuss these issues in the Santee Cooper re-licensing process. All federal permits, which have any bearing on waters of the state, must first receive a §401 water quality certification. The §401 water quality certification will be SCDHEC's main responsibility in the process. For more information on Santee Cooper's re-licensing, view their website at: http://www.santeecooper.com/environment/ferc/index.html.

03050201-020

(Wadboo Creek)

General Description

Watershed 03050201-020 is located in Berkeley County and consists primarily of ***Wadboo Creek*** and its tributaries. The watershed occupies 80,973 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Bladen-Wahee-Hobcaw-Mouzon-Chipley series. The erodibility of the soil (K) averages 0.17 and the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 77.3% forested land, 7.7% scrub/shrub land, 7.2% forested wetland, 6.7% agricultural land, 0.7% barren land, 0.3% water, and 0.1% urban land.

Wadboo Swamp originates near the Town of St. Stephen and merges with the Tail Race Canal to form the West Branch Cooper River. Gravel Hill Swamp accepts the drainage of Walker Swamp (Halfway Swamp) then flows into Wadboo Swamp followed by Rice Hope Swamp, Stewart Creek, Whiskinboo Creek (Cane Pond Branch), Cane Gully Branch (Graveyard Lead, Peters Swamp, Callum Branch), Bullhead Run (Mary Anne Branch), and Broad Ax Branch (Canady Branch, Mingo Branch). Wadboo Swamp becomes Wadboo Creek downstream of Broad Ax Branch. Walleye Bay, located at the headwaters of Whiskinboo Creek and Cane Gully Branch accepts drainage from Big Ocean Bay, Whitten Bay, and Boggy Swamp. Little Ocean Bay, Graveyard Bay, Huckleberry Bay, and Mill Bay drain into Peters Swamp. There are a total of 105.1 stream miles and 57.4 acres of lake waters in this watershed, all classified FW. Another natural resource is the Francis Marion National Forest, which extends across the entire watershed.

Surface Water Quality

Station #	Type	Class	Description
ST-007	S/W	FW	WALKER SWAMP AT US 52 2.5 MI S OF ST. STEPHENS
RS-02461	RS02	FW	WADBOO SWAMP AT S-08-447 THIRD BRIDGE FROM WEST
CSTL-113	W/INT	FW	WADBOO CREEK AT SC 402

Walker Swamp (ST-007) – Aquatic life uses are fully supported, and a significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions.

Wadboo Creek – There are two SCDHEC monitoring sites along Wadboo Creek. This is a blackwater system, characterized by naturally low dissolved oxygen conditions. Although dissolved oxygen excursions occurred at both sites, they were typical of values seen in blackwater systems and were considered natural, not standards violations. At the upstream site ***(RS-02461)***, aquatic life uses are fully supported, but recreational uses are partially supported due to fecal coliform bacteria excursions. At the downstream site ***(CSTL-113)***, aquatic life uses are fully supported. There is a significant increasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand, turbidity, and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are partially supported at this site due

to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

A fish consumption advisory has been issued by the Department for mercury and includes Wadboo Creek within this watershed (see advisory p.69).

NPDES Program

Active NPDES Facilities

RECEIVING STREAM ***FACILITY NAME*** ***PERMITTED FLOW @ PIPE (MGD)***	***NPDES#*** ***TYPE*** ***COMMENT***
HALFWAY SWAMP GA PACIFIC/RUSSELLVILLE PIPE #: 001 FLOW: 0.905	SCG250179 MINOR INDUSTRIAL EFFLUENT
WADBOO SWAMP MACEDONIA ELEM & HIGH SCHOOL PIPE #: 001 FLOW: 0.0298	SC0027090 MINOR DOMESTIC

Nonpoint Source Management Program

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
WARE BROTHERS, INC. FONDREN EARTH EXCAVATION	0817-15 SAND/GRAVEL

Growth Potential

There is a low potential for growth in this watershed, which contains the Town of Bonneau and portions of the communities of Macedonia and Russellville. A large portion of the watershed is contained within the Francis Marion National Forest.

03050201-030

(West Branch Cooper River)

General Description

Watershed 03050201-030 is located in Berkeley County and consists primarily of the ***West Branch Cooper River*** and its tributaries. The watershed occupies 36,155 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Bladen-Bohicket-Wahee-Chipley series. The erodibility of the soil (K) averages 0.14 and the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 63.6% forested land, 11.6% water, 7.6% urban land, 7.3% forested wetland, 7.2% agricultural land, 2.2% scrub/shrub land, and 0.5% barren land.

The West Branch Cooper River is flows out of Lake Moultrie through the Tail Race Canal and accepts drainage from Wadboo Creek. The West Branch Cooper River then accepts drainage from Mepkin Creek, Molly Branch (Stony Branch, Wappoola Swamp) and Durham Creek (Durham Canal) before merging with the East Branch Cooper River to form the Cooper River. The West Branch Cooper River also drains into the Back River watershed via Durham Creek. There are a total of 68.3 stream miles and 729.2 acres of lake waters in this watershed, all classified FW.

Surface Water Quality

Station #	Type	Class	Description
CSTL-085	S/INT	FW	PIER IN W. BRANCH COOPER RIVER AT END OF RICE MILL ROAD IN PIMLICO

West Branch Cooper River (CSTL-085) - Aquatic life and recreational uses are fully supported. There is a significant increasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand and a significant increasing trend in dissolved oxygen concentration suggest improving conditions for these parameters. To abate aquatic plant growth, aquatic herbicides have been applied from 1998 2005.

A fish consumption advisory has been issued by the Department for mercury and includes the West Branch Cooper River within this watershed (see advisory p.69).

Groundwater Quality

Well #	Class	Aquifer	Location
AMB-024	GB	BLACK MINGO	SANTEE COOPER

NPDES Program

Active NPDES Facilities

RECEIVING STREAM / *FACILITY NAME* / *PERMITTED FLOW @ PIPE (MGD)*	*NPDES#* / *TYPE* / *COMMENT*
WEST BRANCH COOPER RIVER TOWN OF MONCKS CORNER WWTP PIPE #: 001 FLOW: 2.4	SC0021598 MAJOR DOMESTIC

WEST BRANCH COOPER RIVER BCW&SA/CENTRAL BERKELEY WWTP PIPE #: 001 FLOW: 1.0	SC0039764 MINOR DOMESTIC
WAPPOOLA SWAMP SCE&G/WILLIAMS ASH DISP PIPE #: 001 FLOW: M/R	SC0046175 MINOR INDUSTRIAL UNCONSTRUCTED
MOLLY BRANCH SCE&G/WILLIAMS LANDFILL PIPE #: 001 FLOW: 0.033	SC0039535 MINOR INDUSTRIAL
MOLLY BRANCH TRIBUTARY OAKLEY MAINTENANCE FACILITY PIPE #: 001 FLOW: 0.0075	SC0026867 MINOR DOMESTIC
MOLLY BRANCH D&A PARTNERSHIP/DANGERFIELD MINE PIPE #: 001 FLOW: M/R	SCG730125 MINOR INDUSTRIAL

Nonpoint Source Management Program

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
SC GENERATING CO., INC. WILLIAMS ASH DISPOSAL	0964-15 SAND

Land Disposal Activities

Landfill Facilities

LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
SCE&G/WILLIAMS STATION INDUSTRIAL	083320-1601 (IWP-191) ACTIVE
SCE&G/GENCO/WILLIAMS STATION INDUSTRIAL	083309-1601 ACTIVE
BERKELEY COUNTY LANDFILL MUNICIPAL	081001-1101 (DWP-105, ACTIVE 081001-1102)
OLD BERKELEY COUNTY MUNICIPAL	DWP-015 CLOSED
OLD BERKELEY COUNTY/NEIGHBORS SITE MUNICIPAL	DWP-073 CLOSED
BERKELEY COUNTY C&D LANDFILL CONSTRUCTION	081001-1201 --------
BERKELEY COUNTY TIRE DISPOSAL MUNICIPAL	081001-5101 --------

Growth Potential

Future growth is expected in several areas within the watershed, including the Town of Moncks Corner, the Whitesville and Pimlico Communities, and the Berkeley Country Club area. The Town of Moncks Corner and Berkeley County operate water and sewer systems in the area, which may allow scattered development.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

Two TMDLs addressing dissolved oxygen were developed by SCDHEC for the ***Charleston Harbor Estuary:*** one covering the Ashley River and the other covering the Charleston Harbor, the Cooper River, and the Wando River. The Harbor/Cooper River/Wando River portion of the system (consisting of the Tail Race Canal, West Branch Cooper River, East Branch Cooper River, Shipyard Creek, Town Creek, Back River, Goose Creek, Wando River and Charleston Harbor) is not considered to be impaired with respect to dissolved oxygen (with the exception of the Wando River monitoring site MD-115); however, available information indicates much of the system does not meet the applicable water quality standard for dissolved oxygen for significant periods of time and is considered water quality limited for the purposes of wasteload allocation (WLA) development. WLAs are an integral part of a TMDL, and although not always developed through the TMDL process, the Department and EPA have chosen to use the TMDL process to develop WLAs for the Charleston Harbor system (see following section). Results of a water quality model indicate the need for a 70% reduction in discharge of oxygen demanding substances to the overall system. A phased approach to achieving these reductions is proposed with an initial Phase I reduction of 60%. For more detailed information on TMDLs, please visit the SCDHEC's Bureau of Water homepage at http://www.scdhec.gov/water and click on "Watersheds and TMDLs" and then "TMDL Program".

Special Models

Charleston Harbor System TMDLs

The modeling efforts for Charleston Harbor and its tributaries have been completed and phased TMDLs for the Ashley and the Cooper systems have been issued by the Department and approved by EPA Region 4. Interim TMDL limits were included in NPDES permits for a number of dischargers while final TMDL limits were included for some dischargers who were already meeting the final limits. Permits included compliance schedules that allowed the opportunity for additional modeling work to be completed before compliance with final limits is required. A group of dischargers working through the local Councils of Government has initiated another modeling effort that is currently underway. If this effort is successfully completed within the allotted time, the existing TMDLs will be revised and, as appropriate, new limits incorporated into NPDES permits for discharges covered by the TMDL.

03050201-040

(East Branch Cooper River)

General Description

Watershed 03050201-040 is located in Berkeley and Charleston Counties and consists primarily of the ***East Branch Cooper River*** and its tributaries. The watershed occupies 123,180 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Yauhannah-Yemassee-Chipley-Hobcaw series. The erodibility of the soil (K) averages 0.15 and the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 77.8% forested land, 16.5% forested wetland, 3.1% scrub/shrub land, 2.0% water, and 0.6% agricultural land.

The East Branch Cooper River is formed by the confluence of Huger Creek and Quinby Creek. Prior to the confluence, Huger Creek accepts drainage from Nicholson Creek (Kutz Creek, Darlington Creek, Darlington Swamp, Cooks Creek, Jericho Branch, Fourth of July Branch), Turkey Creek (Huitt Branch, Old Man Lead, Oakie Branch, Muddy Creek, Fox Gully Branch), Negro Field Branch, and Gough Creek (Alligator Creek, Midway Reserve, Little Hellhole Reserve, Little Hellhole Bay, Quarterman Branch, Upper Reserve, Upper Reserve). Quinby Creek accepts drainage from Harleston Dam Creek (Cropnel Dan Creek), Northampton Creek, Bennett Branch, Deep Branch, Pinckney Reserve Branch, Menzer Run, and York Bottom Creek. Bennett Branch flows through a 50-acre recreational pond, and the Hester Canal bypasses Quinby Creek near its mouth. The entire area prior to the confluence of Huger and Quinby Creeks is within the Francis Marion National Forest.

Downstream of the confluence, the East Branch Cooper River receives drainage from Mayrant Lead, French Quarter Creek (Chipper Swamp, Freshing Lead), and Big Dam Lead (Comingtee Creek). There are a total of 161.2 stream miles and 559.2 acres of lake waters in this watershed, all classified FW.

Surface Water Quality

Station #	Type	Class	Description
RS-02483	RS02	FW	TURKEY CREEK AT FOREST SERVICE RD 251 IRISHTOWN FM SC 402
CSTL-123	INT	FW	EAST BRANCH COOPER RIVER AT BONNEAU FERRY PLANTATION

Turkey Creek (RS-02483) - Aquatic life uses are not supported due to dissolved oxygen and pH excursions. Recreational uses are partially supported due to fecal coliform bacteria excursions.

East Branch Cooper River (CSTL-123) - Aquatic life and recreational uses are fully supported. Aquatic macrophytes have proliferated and public access has been restricted in the Bonneau Ferry area of the river. To reduce aquatic plant growth and enhance public access and use, aquatic herbicides were applied in 2004 and 2005.

A fish consumption advisory has been issued by the Department for mercury and includes the East Branch Cooper River within this watershed (see advisory p.69).

Groundwater Quality

Well #	Class	Aquifer	Location
AMB-023	GB	BLACK MINGO	CAINHOY HIGH SCHOOL

NPDES Program

Active NPDES Facilities

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)*	*NPDES#* *TYPE* *COMMENT*
EAST BRANCH COOPER RIVER CAROLINA LOWCOUNTRY GS COUNCIL PIPE #: 001 FLOW: 0.012	SC0033073 MINOR DOMESTIC
FRENCH QUARTER CREEK FRENCH QUARTER CREEK MINE PIPE #: 001 FLOW: M/R	SCG730086 MINOR INDUSTRIAL

Nonpoint Source Management Program

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
FRENCH QUARTER CREEK INVESTORS FRENCH QUARTER MINE	0873-15 SAND/CLAY

Growth Potential

There is a low potential for growth expected in this watershed, which is almost entirely within the Francis Marion National Forest. There are numerous historic structures located in the area, and great public sentiment to preserve the historic character of the area.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

Two TMDLs addressing dissolved oxygen were developed by SCDHEC for the ***Charleston Harbor Estuary:*** one covering the Ashley River and the other covering the Charleston Harbor, the Cooper River, and the Wando River. The Harbor/Cooper River/Wando River portion of the system (consisting of the Tail Race Canal, West Branch Cooper River, East Branch Cooper River, Shipyard Creek, Town Creek, Back River, Goose Creek, Wando River and Charleston Harbor) is not considered to be impaired with respect to dissolved oxygen (with the exception of the Wando River monitoring site MD-115); however, available information indicates much of the system does not meet the applicable water quality standard for dissolved oxygen for significant periods of time and is considered water quality limited for the purposes of wasteload allocation (WLA) development. WLAs are an integral part of a TMDL, and although not always developed through the TMDL process, the Department and EPA have chosen to use the TMDL process to develop WLAs for the Charleston Harbor system (see following

section). Results of a water quality model indicate the need for a 70% reduction in discharge of oxygen demanding substances to the overall system. A phased approach to achieving these reductions is proposed with an initial Phase I reduction of 60%. For more detailed information on TMDLs, please visit the SCDHEC's Bureau of Water homepage at http://www.scdhec.gov/water and click on "Watersheds and TMDLs" and then "TMDL Program".

Special Models

Charleston Harbor System TMDLs

The modeling efforts for Charleston Harbor and its tributaries have been completed and phased TMDLs for the Ashley and the Cooper systems have been issued by the Department and approved by EPA Region 4. Interim TMDL limits were included in NPDES permits for a number of dischargers while final TMDL limits were included for some dischargers who were already meeting the final limits. Permits included compliance schedules that allowed the opportunity for additional modeling work to be completed before compliance with final limits is required. A group of dischargers working through the local Councils of Government has initiated another modeling effort that is currently underway. If this effort is successfully completed within the allotted time, the existing TMDLs will be revised and, as appropriate, new limits incorporated into NPDES permits for discharges covered by the TMDL.

03050201-050

(Cooper River)

General Description

Watershed 03050201-050 is located in Berkeley and Charleston Counties and consists primarily of the ***Cooper River*** and its tributaries. The watershed occupies 50,841 acres of the Lower Coastal Plain and Coastal Zone regions of South Carolina. The predominant soil types consist of an association of the Bohicket-Chipley-Leon-Capers series. The erodibility of the soil (K) averages 0.17 and the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 33.0% forested land, 25.4% urban land, 17.8% water, 13.1% forested wetland, 6.0% nonforested wetland, 3.2% scrub/shrub land, 1.0% agricultural land, and 0.5% barren land.

The Cooper River is formed at "The Tee" by the confluence of the West Branch Cooper River and the East Branch Cooper River and flows past the City of Charleston and into the Charleston Harbor. En route to the Charleston Harbor, the Cooper River accepts drainage from Tidal Creek, Grove Creek (Little Johnson Creek), the Back River watershed, Flag Creek (Pepper Gully), Slack Reach, Yellow House Creek, the Goose Creek watershed, Filbin Creek, Noisette Creek, Clouter Creek, Shipyard Creek, Newmarket Creek, and the Wando River watershed. There are 362.8 acres of lake waters in the watershed. There are a total of 57.1 stream miles and 7,105.9 acres of estuarine areas, all classified SB. The furthest upstream site on the Cooper River is classified freshwater and saltwater. Other natural resources in this watershed include the Francis Marion National Forest near the Flag Creek headwaters and Cypress Gardens.

Surface Water Quality

Station #	Type	Class	Description
MD-152	P/W	FW/SB	Cooper River at S-08-503, 6.2 mi ESE of Goose Creek
MD-043	P/SPRP	SB	Cooper River at Channel Marker 72 near USN Ammo Depot
MD-044	P/W	SB	Cooper River below mouth of Goose Creek at Chan. Buoy 60
MD-249/MD-593	P/W	SB	Filbin Creek at Virginia Ave., North Charleston
MD-248	P/SPRP	SB	Cooper River at Mark Clark Bridge (I-526)
RT-01633	RT01	SB	Clouter Creek, 2.5 mi E of North Charleston
MD-045	P/INT	SB	Cooper River above mouth of Shipyard Ck at Chan Buoy 49
MD-243	P/W	SB	Shipyard Creek between Marker #6 and McAlloy Dock
MD-047	P/W	SB	Town Creek (W side of Drum Island) under Grace Mem. Brdg
MD-046	P/W	SB	Cooper River under Grace Memorial Bridge

Cooper River – There are six SCDHEC monitoring sites along the Cooper River. Recreational uses are fully supported at all sites and, with the exception of MD-152, a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter. At the furthest upstream site ***(MD-152)***, which is mapped in 03050201-060, aquatic life and recreational uses are fully supported for both freshwater and saltwater classifications. There is a significant increasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration and a significant increasing trend in dissolved oxygen concentration suggest improving conditions for these parameters. Aquatic life uses are fully supported at the next site downstream ***(MD-043)***, and

significant decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration, and total nitrogen concentration and a significant increasing trend in dissolved oxygen concentration suggest improving conditions for these parameters. Further downstream ***(MD-044)***, aquatic life uses are fully supported. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration, and a significant increasing trend in dissolved oxygen concentration suggest improving conditions for these parameters.

Aquatic life uses are again fully supported further downstream ***(MD-248)***. Significant decreasing trends in five-day biochemical oxygen demand, turbidity, total phosphorus concentration, and total nitrogen concentration and a significant increasing trend in dissolved oxygen concentration suggest improving conditions for these parameters. There is a significant increasing trend in pH. At the furthest sites downstream ***(MD-045, MD-046)***, aquatic life uses are fully supported and significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration and a significant increasing trend in dissolved oxygen concentration suggest improving conditions for these parameters.

Filbin Creek (MD-249) - Aquatic life uses are partially supported due to dissolved oxygen excursions. Significant decreasing trends in five-day biochemical oxygen demand and turbidity, and a significant increasing trend in dissolved oxygen concentration suggest improving conditions for these parameters. There is a significant increasing trend in pH. Recreational uses are not supported due to fecal coliform bacteria excursions.

Clouter Creek (RT-01633) - Aquatic life and recreational uses are fully supported.

Shipyard Creek (MD-243) – Aquatic life uses are fully supported. Significant decreasing trends in five-day biochemical oxygen demand, turbidity, total phosphorus and total nitrogen concentration, and a significant increasing trend in dissolved oxygen concentration suggest improving conditions for these parameters. Recreational uses are fully supported and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Town Creek (MD-047) - Aquatic life uses are fully supported. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration and a significant increasing trend in dissolved oxygen concentration suggest improving conditions for these parameters. Recreational uses are fully supported and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

A fish consumption advisory has been issued by the Department for mercury and includes the Cooper River within this watershed (see advisory p.69).

Shellfish Monitoring Stations

Station #	Description
09B-13	CONFLUENCE OF WANDO RIVER AND COOPER RIVER
10B-06	CENTER OF CHANNEL OFF CHARLESTON YACHT CLUB

NPDES Program

Active NPDES Facilities

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)*	*NPDES#* *TYPE* *COMMENT*
COOPER RIVER MEAD WESTVACO SC PIPE #: 001, 002 FLOW: M/R	SC0001759 MAJOR INDUSTRIAL
COOPER RIVER AMERADA HESS/VIRGINIA AVE. N. PIPE #: 001, 002 FLOW: M/R	SC0002852 MINOR INDUSTRIAL
COOPER RIVER AMERADA HESS/VIRGINIA AVE. S. PIPE #: 001,002 FLOW: M/R	SC0002861 MINOR INDUSTRIAL
COOPER RIVER ALLIED TERMINALS/CHARLESTON PIPE #: 001 FLOW: M/R	SC0001350 MINOR INDUSTRIAL
COOPER RIVER SOPUS PRODUCTS/CHAS. PIPE #: 001 FLOW: M/R	SC0003026 MINOR INDUSTRIAL (EQUILON ENTERPRIZES)
COOPER RIVER SUN CHEMICAL CORP. PIPE #: 001 FLOW: M/R	SC0003441 MAJOR INDUSTRIAL (BAYER CORP.)
COOPER RIVER US NAVY/WEAPONS STATION PIPE #: 001,002,003 FLOW: M/R	SC0043206 MINOR INDUSTRIAL
COOPER RIVER NCSD/FELIX DAVIS WWTP PIPE #: 001 FLOW: 27.0	SC0024783 MAJOR DOMESTIC
COOPER RIVER OAK AMERICAS LLC/COOPER RIVER PLT. PIPE #: 001 FLOW: M/R	SC0026506 MAJOR INDUSTRIAL (E.I. DUPONT)
COOPER RIVER BP AMOCO CHEMICALS/COOPER RIVER PIPE #: 001 FLOW: M/R	SC0028584 MAJOR INDUSTRIAL
COOPER RIVER BCW&SA/LOWER BERKELEY WWTP PIPE #: 001 FLOW: 15.0	SC0046060 MAJOR DOMESTIC
COOPER RIVER NUCOR STEEL/BERKELEY PLT PIPE #: 001-003 FLOW: M/R	SC0047392 MAJOR INDUSTRIAL
COOPER RIVER TRIBUTARY MT PLEASANT WATER PLANT #2	SC0043273 MINOR DOMESTIC

PIPE #: 001 FLOW: 0.5

COOPER RIVER TRIBUTARY	SCG250040
EVENING POST PUBLISHING CO.	MINOR INDUSTRIAL
PIPE #: 001 FLOW: M/R	
TIDAL CREEK TO COOPER RIVER	SC0047074
CHARLESTON CPW/DANIEL ISLAND	MINOR DOMESTIC
PIPE #: 001 FLOW: 0.5	
PROPOSED FLOW: 0.75, 1.0, 2.0, 4.0	MAJOR DOMESTIC
TIDAL CREEK TO COOPER RIVER	SC0003883
SCE&G/WILLIAMS STATION	MAJOR INDUSTRIAL
PIPE #: 001-005 FLOW: M/R	
FILBIN CREEK	SCG340022
DEFENSE FUEL SUPPORT PT/CHAS.	MINOR INDUSTRIAL
PIPE #: 001,002 FLOW: M/R	(SC0021997)
FILBIN CREEK	SC0001759
MEAD WESTVACO CORP/CHAS.	MAJOR INDUSTRIAL
PIPE #: 004 FLOW: M/R	
FILBIN CREEK	SCG340015
KINDER MORGAN BULK TERM./N. CHAS.	MINOR INDUSTRIAL
PIPE #: 001 FLOW: M/R	(MARATHON ASHLAND/SC0034134)
SHIPYARD CREEK	SC0048046
KINDER MORGAN BULK TERM./SHIPYARD RIV. TERM.	MINOR INDUSTRIAL
PIPE #: 001 FLOW: M/R	
SHIPYARD CREEK	SC0041173
MONTENAY CHARLESTON/RESOURCE RECOVERY	MINOR INDUSTRIAL
PIPE #: 001-004 FLOW: M/R	(FOSTER WHEELER)

Nonpoint Source Management Program

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
OL THOMPSON CONSTRUCTION CO., INC.	0962-15
PRIMUS TRACT	SAND/CLAY

Land Disposal Activities

Landfill Facilities

SOLID WASTE LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
WESTVACO LANDFILL	IWP-177, IWP-090, IWP-150
INDUSTRIAL	--------
CHARLESTON/SPRUIL AVE. DUMP	---------
MUNICIPAL	CLOSED

GASTON DUMP MUNICIPAL	--------- CLOSED
HOLSTON LANDFILL MUNICIPAL	DWP-003 NEVER OPENED
ROMEY STREET LANDFILL MUNICIPAL	DWP-079, DWP-061 CLOSED

Growth Potential

The Union Terminal (Sea Port Facility) within the City of Charleston is projected to be an area of population growth. The population in the urban areas west of the Cooper River has declined in the last decade and are not expected to grow in the near future. The U.S. Navy Base/Shipyard was closed by the Navy in 1996. The Office/Manufacturing/Industrial reuses of this property will occur well into the future, but residential uses are not significant components of the Base Reuse Plan. The Bushy Industrial Park, which includes several very large industries, is also located in this watershed, and should continue to encourage industrial growth.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

Two TMDLs addressing dissolved oxygen were developed by SCDHEC for the ***Charleston Harbor Estuary:*** one covering the Ashley River and the other covering the Charleston Harbor, the Cooper River, and the Wando River. The Harbor/Cooper River/Wando River portion of the system (consisting of the Tail Race Canal, West Branch Cooper River, East Branch Cooper River, Shipyard Creek, Town Creek, Back River, Goose Creek, Wando River and Charleston Harbor) is not considered to be impaired with respect to dissolved oxygen (with the exception of the Wando River monitoring site MD-115); however, available information indicates much of the system does not meet the applicable water quality standard for dissolved oxygen for significant periods of time and is considered water quality limited for the purposes of wasteload allocation (WLA) development. WLAs are an integral part of a TMDL, and although not always developed through the TMDL process, the Department and EPA have chosen to use the TMDL process to develop WLAs for the Charleston Harbor system (see following section). Results of a water quality model indicate the need for a 70% reduction in discharge of oxygen demanding substances to the overall system. A phased approach to achieving these reductions is proposed with an initial Phase I reduction of 60%. For more detailed information on TMDLs, please visit the SCDHEC's Bureau of Water homepage at http://www.scdhec.gov/water and click on "Watersheds and TMDLs" and then "TMDL Program".

Special Models

Charleston Harbor System TMDLs

The modeling efforts for Charleston Harbor and its tributaries have been completed and phased TMDLs for the Ashley and the Cooper systems have been issued by the Department and approved by EPA Region 4. Interim TMDL limits were included in NPDES permits for a number of dischargers while final TMDL limits were included for some dischargers who were already meeting the final limits. Permits

included compliance schedules that allowed the opportunity for additional modeling work to be completed before compliance with final limits is required. A group of dischargers working through the local Councils of Government has initiated another modeling effort that is currently underway. If this effort is successfully completed within the allotted time, the existing TMDLs will be revised and, as appropriate, new limits incorporated into NPDES permits for discharges covered by the TMDL.

03050201-060

(Back River)

General Description

Watershed 03050201-060 is located in Berkeley County and consists primarily of the ***Back River*** and its tributaries. The watershed occupies 49,168 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Bladen-Wahee-Bohicket-Hobcaw series. The erodibility of the soil (K) averages 0.17 and the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 70.7% forested land, 11.9% urban land, 7.5% forested wetland, 5.1% agricultural land, 3.0% scrub/shrub land, 1.4% water, and 0.3% barren land.

The Back River forms from swamp drainage and flows into the Cooper River. Laurel Swamp (Gants Mill Branch, Tillmans Branch, Poplar Branch, Daisy Swamp, King Branch, Huckhole Swamp), Sophia Swamp (Lindsey Branch, Brick Bound Swamp), and Canterhill Swamp flow into the Back River, which is joined downstream by Chicken Creek. The Back River is dammed further downstream to create the Back River Reservoir (also know as the Bushy Park Reservoir) and insure freshwater storage for industrial purposes. Water is not released from the dam but is pumped into the Cooper River near Bushy Industrial Park. The waters downstream from the dam are essentially backflow from the Cooper River (SB). Prioleau Creek (Long Field Pond, Crane Pond) enters Back River Reservoir in the upper lake region and Foster Creek enters the reservoir near the dam. There are a total of 87.3 stream miles, 287.1 acres of lake waters, and 80.3 acres of estuarine areas in this watershed.

Surface Water Quality

Station #	Type	Class	Description
MD-240	P/W	FW	FOSTER CREEK AT CHARLESTON CPW WATER INTAKE
CSTL-124	INT	FW	BACK RIVER RESERVOIR IN FOREBAY EQUIDISTANT FROM DAM AND SHORELINES
MD-217	P/W	FW	DURHAM CREEK AT S-08-9 BRIDGE

Foster Creek (MD-240) – Aquatic life uses are not supported due to dissolved oxygen excursions. Significant decreasing trends in five-day biochemical oxygen demand, turbidity, and total nitrogen concentration suggest improving conditions for these parameters. There is a significant increasing trend in pH. Recreational uses are fully supported and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Back River Reservoir **(CSTL-124) –** Aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute criterion and dissolved oxygen excursions. Recreational uses are fully supported. Aquatic macrophytes have proliferated and public access has been restricted on the reservoir. Aquatic herbicides were applied from 1998-2005 in order to reduce aquatic plant growth, enhance water quality and public access and use, maintain electric power generation, and minimize impacts to water intakes.

Durham Creek (MD-217) – Aquatic life and recreational uses are fully supported. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration suggest improving conditions for these parameters. There is a significant increasing trend in pH.

A fish consumption advisory has been issued by the Department for mercury and includes the Back River Reservoir and Durham Creek within this watershed (see advisory p.69).

NPDES Program

Active NPDES Facilities

RECEIVING STREAM / ***FACILITY NAME*** / ***PERMITTED FLOW @ PIPE (MGD)***	***NPDES#*** / ***TYPE*** / ***COMMENT***
LINDSEY BRANCH JW ALUMINUM CO. PIPE #: 001 FLOW: M/R	SCG250105 MINOR INDUSTRIAL
POPLAR BRANCH THOMAS DANIELS 17A BORROW PIT PIPE #: 001 FLOW: M/R	SCG730005 MINOR INDUSTRIAL
LAUREL SWAMP STRAWBERRY MHP PIPE #: 001 FLOW: 0.015	SC0032859 MINOR DOMESTIC (KC MHP #3)

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME / ***FACILITY TYPE***	***PERMIT #*** / ***STATUS***
SANTEE RIVER RUBBER CORP. INDUSTRIAL	082623-5201 --------

Mining Activities

MINING COMPANY / ***MINE NAME***	***PERMIT #*** / ***MINERAL***
ACRE MAKER, A PARTNERSHIP 17A MINE PIT	0743-15 SAND; SAND/CLAY

Water Quantity

WATER USER / ***STREAM***	***REGULATED CAPACITY (MGD)*** / ***PUMPING CAPACITY (MGD)***
CHARLESTON CPW FOSTER CREEK	125.0 150.0

Growth Potential

There is a moderate potential for growth in the form of scattered low density development, in this watershed containing a large portion of the Town of Goose Creek. Water and sewer service is available to most of the watershed. Fresh water is a vital necessity to the area's economy. The Back River and its tributaries are a major source of fresh water for the public water supply and many of the large industries located along the Cooper River. Another source is the interbasin transfer via a pipeline connecting the Edisto River to the Hanahan WTP.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

Two TMDLs addressing dissolved oxygen were developed by SCDHEC for the ***Charleston Harbor Estuary:*** one covering the Ashley River and the other covering the Charleston Harbor, the Cooper River, and the Wando River. The Harbor/Cooper River/Wando River portion of the system (consisting of the Tail Race Canal, West Branch Cooper River, East Branch Cooper River, Shipyard Creek, Town Creek, Back River, Goose Creek, Wando River and Charleston Harbor) is not considered to be impaired with respect to dissolved oxygen (with the exception of the Wando River monitoring site MD-115); however, available information indicates much of the system does not meet the applicable water quality standard for dissolved oxygen for significant periods of time and is considered water quality limited for the purposes of wasteload allocation (WLA) development. WLAs are an integral part of a TMDL, and although not always developed through the TMDL process, the Department and EPA have chosen to use the TMDL process to develop WLAs for the Charleston Harbor system (see following section). Results of a water quality model indicate the need for a 70% reduction in discharge of oxygen demanding substances to the overall system. A phased approach to achieving these reductions is proposed with an initial Phase I reduction of 60%. For more detailed information on TMDLs, please visit the SCDHEC's Bureau of Water homepage at http://www.scdhec.gov/water and click on "Watersheds and TMDLs" and then "TMDL Program".

Special Models

Charleston Harbor System TMDLs

The modeling efforts for Charleston Harbor and its tributaries have been completed and phased TMDLs for the Ashley and the Cooper systems have been issued by the Department and approved by EPA Region 4. Interim TMDL limits were included in NPDES permits for a number of dischargers while final TMDL limits were included for some dischargers who were already meeting the final limits. Permits included compliance schedules that allowed the opportunity for additional modeling work to be completed before compliance with final limits is required. A group of dischargers working through the local Councils of Government has initiated another modeling effort that is currently underway. If this effort is successfully completed within the allotted time, the existing TMDLs will be revised and, as appropriate, new limits incorporated into NPDES permits for discharges covered by the TMDL.

03050201-070

(Goose Creek)

General Description

Watershed 03050201-070 is located in Berkeley, Charleston, and Dorchester Counties and consists primarily of ***Goose Creek*** and its tributaries. The watershed occupies 38,766 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Bohicket-Bladen-Wahee-Yonges series. The erodibility of the soil (K) averages 0.15 and the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 41.7% urban land, 45.0% forested land, 4.5% nonforested wetland, 2.6% scrub/shrub land, 2.6% agricultural land, 2.1% forested wetland, 1.4% water, and 0.1% barren land.

Ancrum Swamp and Huckhole Swamp flow into Bluehouse Swamp (Ladson Branch, McChune Branch) to form the headwaters of Goose Creek, which is dammed into Goose Creek Reservoir and used for recreation and water supply. Goose Creek is classified FW from its headwaters to the Goose Creek Reservoir Dam, and SB downstream from the reservoir. Turkey Creek (SB) flows into Goose Creek downstream of the reservoir near the Town of Hanahan. Old Goose Creek drains into Goose Creek as does New Tenant Pond, Brown Pond, and Logan Pond before it flows into the Cooper River. The entire watershed is within the U.S. Naval Reserve. There are a total of 44.1 stream miles, 589.7 acres of lake waters, and 364.3 acres of estuarine areas in this watershed.

Surface Water Quality

Station #	Type	Class	Description
MD-114	P/W	FW	GOOSE CREEK AT U.S. 52 N CHARLESTON
RL-01008	RL01	FW	GOOSE CREEK RESERVOIR, 2.3 MI S OF GOOSE CREEK TOWN CENTER
ST-033/CL-050	W	FW	GOOSE CREEK RES. AT 2ND POWER LINES UPSTREAM OF BOAT RAMP
ST-032/CL-049	P/SPRP	FW	GOOSE CREEK RESERVOIR 100 M UPSTREAM OF DAM
MD-039	P/INT	SB	GOOSE CREEK AT S-08-136 BRIDGE

Goose Creek **-** There are two SCDHEC monitoring sites along Goose Creek. Aquatic life uses are not supported at the upstream site ***(MD-114)*** due to dissolved oxygen excursions, which are compounded by a significant decreasing trend in dissolved oxygen concentration. Significant decreasing trends in five-day biochemical oxygen demand, turbidity, and total nitrogen concentration suggest improving conditions for these parameters. There is a significant increasing trend in pH. Recreational uses are partially supported at this site due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Aquatic life uses are fully supported at the downstream site ***(MD-039)***, and significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration suggest improving conditions for these parameters. There is a significant increasing trend in pH. Recreational uses are not supported at this site due to fecal coliform bacteria excursions; however, a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Goose Creek Reservoir - There are three SCDHEC monitoring sites along Goose Creek Reservoir. Recreational uses are fully supported at all sites. Aquatic life uses are partially supported at the upstream site ***(RL-01008)*** due to dissolved oxygen excursions. At the midstream site ***(ST-033),*** aquatic life uses are not supported due to excursions in pH, total phosphorus, chlorophyll-*a*, and copper. At the furthest downstream site ***(ST-032),*** aquatic life uses are not supported due to excursions in pH, total phosphorus, and chlorophyll-*a*. A significant increasing trend in dissolved oxygen concentration suggests improving conditions for this parameter. There is a significant increasing trend in pH at this site. To abate aquatic plant growth in the reservoir, aquatic herbicides were applied from 1998-2005.
A fish consumption advisory has been issued by the Department for mercury and includes Goose Creek Reservoir within this watershed (see advisory p.69).

NPDES Program

Active NPDES Facilities

RECEIVING STREAM ***FACILITY NAME*** ***PERMITTED FLOW @ PIPE (MGD)***	***NPDES#*** ***TYPE*** ***COMMENT***
GOOSE CREEK CHARLESTON CPW/HANAHAN WTP PIPE #: 001 FLOW: M/R	SCG645043 MINOR DOMESTIC (SC0040266)

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
M&S DEVELOPMENT CO. INDUSTRIAL	IWP-136 --------
G&S ROOFING PRODUCTS INDUSTRIAL	102434-1601 (IWP-046, IWP-162) ACTIVE
ROBERT O. COLLINS C/C LANDFILL CONSTRUCTION	102407-1201 (CWP-039) ---------
PEPPERHILL DEVELOPMENT C&D CONSTRUCTION	182441-1201 (182441-1601) ACTIVE
S.C. PUB. SERV. AUTH./CHARLESTON MUNICIPAL	DWP-004 CLOSED
WESTVACO/CHARLESTON CO. INDUSTRIAL	--------- CLOSED

Land Application Sites

LAND APPLICATION ***FACILITY NAME***	***PERMIT #*** ***YPE***

SPRAYFIELD	ND0073491
CHARLESTON CPW/HANAHAN WTP	DOMESTIC

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
BANKS CONSTRUCTION COMPANY LAKEVIEW MINE	0488-19 SAND/CLAY
ROBERT O. COLLINS COMPANY, INC. SPRINGROVE MINES	0595-19 SAND/CLAY

Water Quantity

WATER USER ***STREAM***	***REGULATED CAPACITY (MGD)*** ***PUMPING CAPACITY (MGD)***
CITY OF CHARLESTON	10.0
GOOSE CREEK RESERVOIR	10.0

Growth Potential

The primary population growth areas in this watershed include the Town of Hanahan, North Charleston, and Berkeley County. In addition, the Charleston County Parks and Recreation Commission has purchased a large parcel of land above Goose Creek Reservoir for development as a county park. The interbasin transfer of fresh water via a pipeline connecting the Edisto River to the Hanahan WTP will help to provide for growth in this area.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

Two TMDLs addressing dissolved oxygen were developed by SCDHEC for the ***Charleston Harbor Estuary:*** one covering the Ashley River and the other covering the Charleston Harbor, the Cooper River, and the Wando River. The Harbor/Cooper River/Wando River portion of the system (consisting of the Tail Race Canal, West Branch Cooper River, East Branch Cooper River, Shipyard Creek, Town Creek, Back River, Goose Creek, Wando River and Charleston Harbor) is not considered to be impaired with respect to dissolved oxygen (with the exception of the Wando River monitoring site MD-115); however, available information indicates much of the system does not meet the applicable water quality standard for dissolved oxygen for significant periods of time and is considered water quality limited for the purposes of wasteload allocation (WLA) development. WLAs are an integral part of a TMDL, and although not always developed through the TMDL process, the Department and EPA have chosen to use the TMDL process to develop WLAs for the Charleston Harbor system (see following section). Results of a water quality model indicate the need for a 70% reduction in discharge of oxygen demanding substances to the overall system. A phased approach to achieving these reductions is proposed with an initial Phase I reduction of 60%. For more detailed information on TMDLs, please visit

the SCDHEC's Bureau of Water homepage at http://www.scdhec.gov/water and click on "Watersheds and TMDLs" and then "TMDL Program".

Special Models

Charleston Harbor System TMDLs

The modeling efforts for Charleston Harbor and its tributaries have been completed and phased TMDLs for the Ashley and the Cooper systems have been issued by the Department and approved by EPA Region 4. Interim TMDL limits were included in NPDES permits for a number of dischargers while final TMDL limits were included for some dischargers who were already meeting the final limits. Permits included compliance schedules that allowed the opportunity for additional modeling work to be completed before compliance with final limits is required. A group of dischargers working through the local Councils of Government has initiated another modeling effort that is currently underway. If this effort is successfully completed within the allotted time, the existing TMDLs will be revised and, as appropriate, new limits incorporated into NPDES permits for discharges covered by the TMDL.

Special Projects

Goose Creek Reservoir Restoration

Goose Creek Reservoir is located in Berkeley County, north of the City of Charleston. Nuisance aquatic plant growth and fish kills, as a result of low dissolved oxygen, have occurred. Various activities have focused on eliminating the excess vegetation. The S.C. Department of Natural Resources, in implementing the recommendations of the S.C. Aquatic Plant Management Council, has used chemical treatments and sterile grass carp with positive results. SCDHEC's OCRM, in cooperation with the local Soil and Water Conservation District, have used §319 funds to remove other masses of vegetation and open up more of the reservoir for enhanced circulation and re-aeration of the water surface. As of 2004, the Goose Creek Reservoir meets standards for dissolved oxygen at all monitoring locations.

03050201-080

(Wando River)

General Description

Watershed 03050201-080 extends through Berkeley and Charleston Counties and consists primarily of the ***Wando River*** and its tributaries. The watershed occupies 74,017 acres of the Coastal Zone region of South Carolina. The predominant soil types consist of an association of the Bohicket-Chipley-Yonges-Kiawah-Chisolm series. The erodibility of the soil (K) averages 0.12 and the slope of the terrain averages 1%, with a range of 0-6%. Land use/land cover in the watershed includes: 64.3% forested land, 13.9% nonforested wetland, 8.9% water, 5.5% urban land, 4.2% forested wetland, 2.3% scrub/shrub land, 0.8% agricultural land, and 0.1% barren land.

The Wando River accepts drainage from the Iron Swamp (Mayrants Reserve), Alston Creek, Darrell Creek, Deep Creek, Toomer Creek, and Wagner Creek before receiving Guerin Creek drainage (Lachicotte Creek, Old House Creek, Fogarty Creek) near Cat Island. The Guerin Creek drainage flows through the Francis Marion National Forest. Johnfield Creek enters the river downstream followed by Horlbeck Creek (Boone Hall Creek), Fosters Creek, Beresford Creek (Martin Creek, Sanders Creek, Hopewell Creek), Ralston Creek, Rathall Creek and Bermuda Creek. Beresford Creek is connected to Clouter Creek in watershed 03050201-050. From the headwaters to a point 2.5 miles north of its confluence with the Cooper River, the Wando River is Classified SFH; downstream of this point to its confluence with the Cooper River, the Wando River is classified SA. Hobcaw Creek (Lake Woodlawn) and Molasses Creek enter the Wando River at the base of the watershed (SFH) near the Town of Mount Pleasant. The Wando River then drains into the Cooper River, which flows into the Charleston Harbor. There are a total of 20.3 stream miles, 70.9 acres of lake waters, and 5,509.1 acres of estuarine areas in this watershed.

Surface Water Quality

Station #	Type	Class	Description
MD-115	P/INT	SFH	WANDO RIVER AT S.C. 41
RO-02014	RO02	SFH	WANDO RIVER, 2.0 MI W OF PHILIP
RO-01162	RO01	SFH	WANDO RIVER, 6.25 MI E OF NORTH CHARLESTON
MD-264	INT	SFH	WANDO RIVER AT I-526 MARK CLARK EXPRESSWAY
MD-198	P/W	SFH	WANDO RIVER BETWEEN RATHALL & HOBCAW CREEKS

Wando River - There are five SCDHEC monitoring sites along the Wando River and recreational uses are fully supported at all sites. At the furthest upstream site ***(MD-115)***, aquatic life uses are partially supported due to occurrences of copper in excess of the aquatic life acute criterion. There is also a significant increasing trend in turbidity. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration suggest improving conditions for these parameters. At the midstream sites ***(RO-02014, RO-01162, MD-264)***, aquatic life uses are fully supported.

Aquatic life uses are also fully supported at the furthest downstream site ***(MD-198)***, and a significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-

day biochemical oxygen demand, total nitrogen concentration, and fecal coliform bacteria concentration suggest improving conditions for these parameters. *Fish tissue samples from the lower Wando River indicate no advisories are needed at this time.*

Shellfish Monitoring Stations

Station #	Description
09B-01	WANDO RIVER AT NOWELL CREEK
09B-02	WANDO RIVER AT HORLBECK CREEK
09B-03	WANDO RIVER AT SC HWY 41 BRIDGE
09B-04	WANDO RIVER AT DEEP CREEK
09B-05	WANDO RIVER OPPOSITE BIG PARADISE ISLAND
09B-06	WANDO RIVER AT PARADISE BOAT LANDING
09B-07	BOONE HALL CREEK OPPOSITE COUNTY RECREATION AREA
09B-08	WANDO RIVER AT MARKER #29
09B-09	DEEP CREEK – 1 MI FORM CONFLUENCE WITH WANDO RIVER
09B-10	WANDO RIVER AT ALSTON CREEK CONFLUENCE
09B-11	WANDO RIVER AT GUERIN CREEK
09B-12	GUERIN CREEK AT OLD HOUSE CREEK
09B-14	NORTH EDGE OF SC PORT AUTHORITY/WANDO TERMINAL
09B-15	NEW BRIDGE- ROUTE I-526
09B-16	CONFLUENCE OF MARTIN CREEK AND NOWELL CREEK
09B-17	WANDO RIVER MIDWAY BETWEEN STATIONS 3 AND 11 (AT OLD DRY DOCK)
09B-18	RAT HALL CREEK AT CONFLUENCE WITH WANDO RIVER
09B-19	FOSTER CREEK AT CONFLUENCE WITH WANDO RIVER

NPDES Program

Active NPDES Facilities

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)*	*NPDES#* *TYPE* *COMMENT*
WANDO RIVER DETYENS SHIPYARDS/WANDO YARD PIPE #: 001 FLOW: M/R	SC0033022 MINOR INDUSTRIAL

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
MT PLEASANT TRANSFER STATION MUNICIPAL	101002-6001 --------

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
DIRT CHEAP, INC. KIWI MINE	1165-19 SAND

Growth Potential

There is a high potential for growth projected for this watershed, which contains portions of the Towns of Mt. Pleasant and Awendaw, and the City of Charleston. Some of the major development areas include: Dunes West, Liberty, Rivertowne, Brickyard, Long Point, Belle Hall, and Daniel Island. Water and sewer services are available in all potential growth areas.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

Two TMDLs addressing dissolved oxygen were developed by SCDHEC for the ***Charleston Harbor Estuary:*** one covering the Ashley River and the other covering the Charleston Harbor, the Cooper River, and the Wando River. The Harbor/Cooper River/Wando River portion of the system (consisting of the Tail Race Canal, West Branch Cooper River, East Branch Cooper River, Shipyard Creek, Town Creek, Back River, Goose Creek, Wando River and Charleston Harbor) is not considered to be impaired with respect to dissolved oxygen (with the exception of the Wando River monitoring site MD-115); however, available information indicates much of the system does not meet the applicable water quality standard for dissolved oxygen for significant periods of time and is considered water quality limited for the purposes of wasteload allocation (WLA) development. WLAs are an integral part of a TMDL, and although not always developed through the TMDL process, the Department and EPA have chosen to use the TMDL process to develop WLAs for the Charleston Harbor system (see following section). Results of a water quality model indicate the need for a 70% reduction in discharge of oxygen demanding substances to the overall system. A phased approach to achieving these reductions is proposed with an initial Phase I reduction of 60%. For more detailed information on TMDLs, please visit the SCDHEC's Bureau of Water homepage at http://www.scdhec.gov/water and click on "Watersheds and TMDLs" and then "TMDL Program".

Special Models

Charleston Harbor System TMDLs

The modeling efforts for Charleston Harbor and its tributaries have been completed and phased TMDLs for the Ashley and the Cooper systems have been issued by the Department and approved by EPA Region 4. Interim TMDL limits were included in NPDES permits for a number of dischargers while final TMDL limits were included for some dischargers who were already meeting the final limits. Permits included compliance schedules that allowed the opportunity for additional modeling work to be completed before compliance with final limits is required. A group of dischargers working through the local Councils of Government has initiated another modeling effort that is currently underway. If this effort is successfully completed within the allotted time, the existing TMDLs will be revised and, as appropriate, new limits incorporated into NPDES permits for discharges covered by the TMDL.

03050202-010

(Cypress Swamp)

General Description

Watershed 03050202-010 is located in Berkeley and Dorchester Counties and consists primarily of ***Cypress Swamp*** and its tributaries from its origin to Captains Branch. The watershed occupies 100,364 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Rains-Hobcaw-Lynchburg-Mouzon series. The erodibility of the soil (K) averages 0.20 and slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 76.6% forested land, 9.3% forested wetland, 6.8% agricultural land, 5.5% scrub/shrub land, 0.8% urban land, 0.5% barren land, 0.4% water, and 0.1% nonforested wetland.

Williams Branch flows into Big Run and is joined by Black Creek to form Wassamassaw Swamp, which accepts drainage from Mill Branch, Acton Creek, and Simmons Bay. Partridge Creek (Rudd Branch, Mill Branch) joins Wassamassaw Swamp to form the headwaters of the Cypress Swamp. The Cypress Swamp receives drainage from Sandy Run (Smith Branch), Miller Dam Branch, Felder Branch, Dawson Branch, Stanley Branch (Kelly Branch), and Green Bay Branch near the Town of Ridgeville. There are a total of 176.2 stream miles and 82.9 acres of lake waters in this watershed, all classified FW.

Surface Water Quality

Station #	Type	Class	Description
CSTL-063	P/W	FW	WASSAMASSAW SWAMP AT U.S. 176
CSTL-078	W/INT	FW	CYPRESS SWAMP AT U.S. 78

Wassamassaw Swamp (CSTL-063) - Aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute criterion. This is a blackwater system, characterized by naturally low dissolved oxygen conditions. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. There is a significant increasing trend in pH. Significant decreasing trends in five-day biochemical oxygen demand, turbidity, and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are partially supported due to fecal coliform bacteria excursions, which are compounded by a significant increasing trend in fecal coliform bacteria concentration.

Cypress Swamp (CSTL-078) - Aquatic life uses are not supported due to occurrences of zinc in excess of the aquatic life acute criterion. This is a blackwater system, characterized by naturally low dissolved oxygen conditions. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Groundwater Quality

Well #	Class	Aquifer	Location
AMB-096	GB	TERTIARY LIMESTONE	LEIBER CORRECTIONAL INST.

NPDES Program

Active NPDES Facilities

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)*	*NPDES#* *TYPE* *COMMENT*
MILL BRANCH D&A PARTNERSHIP/CUMBIE PIT PIPE #: 001 FLOW: M/R	SCG730115 MINOR INDUSTRIAL

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
WESTVACO INDUSTRIAL	082430-1601 (IWP-201) ACTIVE
BFI MUNICIPAL	DWP-129, DWP-163 CLOSED
TRIDENT NORTH LANDFILL (BFI) INDUSTRIAL	IWP-163 CLOSED

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
ACD, A PARTNERSHIP DANGERFIELD MINE (17A)	0625-15 SAND; SAND/CLAY
WHITFIELD CO. WHITS PIT	0483-15 SAND
TRULUCK INDUSTRIES, INC. BERKELEY MINE	0935-15 SAND

Growth Potential

Low density population growth is projected to occur in this watershed, which contains a portion of the Town of Ridgeville.

03050202-020

(Cypress Swamp/Ashley River)

General Description

Watershed 03050202-020 is located in Dorchester and Berkeley Counties and consists primarily of the ***Cypress Swamp*** and the ***Ashley River*** and their tributaries from Captains Branch to Dorchester Creek. The watershed occupies 48,172 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Daleville-Jedburg-Meggett-Brookman series. The erodibility of the soil (K) averages 0.28 and the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 65.9% forested land, 10.5% urban land, 10.4% forested wetland, 8.5% agricultural land, 2.7% scrub/shrub land, 1.4% nonforested wetland, 0.3% water, and 0.3% barren land.

Cypress Swamp accepts drainage from Captains Creek (McKeown Branch), Platt Branch, Rumphs Hill Creek (Negro Branch), Tina Branch, and Hurricane Branch. The confluence of Cypress Swamp and Hurricane Branch forms the headwaters of the Ashley River near the Town of Summerville. The river then flows through Bobs Lake and Schultz Lake to Bacon Bridge and drains into the lower Ashley River. The river is classified FW upstream of Bacon Bridge, and classified SA downstream of the bridge. There are a total of 83.5 stream miles, 237.9 acres of lake waters, and 38.9 acres of estuarine areas in this watershed. Givhans Ferry State Park is located in the headwaters of this watershed.

Surface Water Quality

Station #	Type	Class	Description
CSTL-102	P/INT	FW/SA	ASHLEY RIVER AT SC 165 4.8 MI SSW OF SUMMERVILLE

Ashley River (CSTL-102) - Aquatic life uses are not supported for both fresh and saltwater classifications due to dissolved oxygen excursions. A significant increasing trend in pH occurred with both classifications. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration occurred with both classifications, suggesting improving conditions for these parameters. Recreational uses are partially supported for both classifications due to fecal coliform bacteria excursions, which are compounded by a significant increasing trend in fecal coliform bacteria concentration.

A fish consumption advisory has been issued by the Department for mercury and includes portions of the Ashley River within this watershed (see advisory p.69).

NPDES Program

Active NPDES Facilities

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)*	*NPDES#* *TYPE* *COMMENT*
ASHLEY RIVER CWS/TEAL-ON-THE-ASHLEY PIPE #: 001 FLOW: 0.03	SC0030350 MINOR DOMESTIC
PLATT BRANCH LINQ INDUSTRIAL FABRICS, INC. PIPE #: 001 FLOW: M/R	SC0003905 MINOR INDUSTRIAL

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
AMERIACAN RESOURCES INC. --------	182415-5201 --------
WESTCO PLANTATION INDUSTRIAL	182437-1201 (IWP-138, CWP-036)) ACTIVE

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
MURRAY MINES, INC. MURRAY MINE	0044-35 SAND
JENNER TRUCKING & CONSTRUCTION, INC. JENNER RECYCLING	1355-35 CLAY
PALMETTO SAND CO. THE PONDS	1150-35 SAND

Growth Potential

There is a high potential for growth in this watershed, which contains a portion of the Town of Summerville, and water and sewer services are available to these growth areas.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

Two TMDLs addressing dissolved oxygen were developed by SCDHEC for the ***Charleston***

Harbor Estuary: one covering the ***Ashley River*** and the other covering the Charleston Harbor, the Cooper River, and the Wando River. The Ashley River portion of the system contains watersheds 03050202-020 and 03050202-040. Dissolved oxygen violations at two stations along the Ashley River (CSTL-102 and MD-049) are considered natural due to conditions exacerbated by point and nonpoint sources of pollution. A water quality model was developed to predict the impact of point source dischargers on dissolved oxygen concentration in the system. Results indicate the need for an overall 36% reduction in discharge of ultimate oxygen demand (UOD) to the Ashley River. For more detailed information on TMDLs, please visit the SCDHEC's Bureau of Water homepage at http://www.scdhec.gov/water and click on "Watersheds and TMDLs" and then "TMDL Program".

Special Models

Charleston Harbor System TMDLs

The modeling efforts for Charleston Harbor and its tributaries have been completed and phased TMDLs for the Ashley and the Cooper systems have been issued by the Department and approved by EPA Region 4. Interim TMDL limits were included in NPDES permits for a number of dischargers while final TMDL limits were included for some dischargers who were already meeting the final limits. Permits included compliance schedules that allowed the opportunity for additional modeling work to be completed before compliance with final limits is required. A group of dischargers working through the local Councils of Government has initiated another modeling effort that is currently underway. If this effort is successfully completed within the allotted time, the existing TMDLs will be revised and, as appropriate, new limits incorporated into NPDES permits for discharges covered by the TMDL.

03050202-030

(Dorchester Creek/Eagle Creek)

General Description

Watershed 03050202-030 is located in Berkeley, Charleston, and Dorchester Counties and consists primarily of ***Dorchester Creek and Eagle Creek*** and their tributaries. The watershed occupies 21,785 acres of the Lower Coastal Plain region of South Carolina. The predominant soil types consist of an association of the Yauhannah-Yemassee-Meggett-Brookman series. The erodibility of the soil (K) averages 0.15 and the slope of the terrain averages 1%, with a range of 0-6%. Land use/land cover in the watershed includes: 47.7% forested land, 44.6% urban land, 3.2% agricultural land, 2.9% scrub/shrub land, 1.2% forested wetland, 0.2% barren land, 0.1% nonforested wetland, and 0.1% water.

Sawmill Branch (Limehouse Branch, Stroberfield Branch) flows past the Town of Summerville and is joined by Rose Creek to form Dorchester Creek, which flows into the Ashley River. Sawmill Branch is classified FW, and Dorchester Creek takes on the classification of the Ashley River, which is SA. Limehouse Branch is connected to Ancrum Swamp in watershed 03050201-070. Eagle Creek (SB) accepts drainage from Chandler Bridge Creek, Spencer Branch, and Federwitz Branch before draining into the Ashley River. There are a total of 27.2 stream miles, 36.4 acres of lake waters, and 105.6 acres of estuarine areas in this watershed.

Surface Water Quality

Station #	Type	Class	Description
CSTL-043	S/W	FW	SAWMILL BRANCH AT SC 78 E OF SUMMERVILLE
CSTL-013	P/INT	SA	DORCHESTER CREEK AT SC 165
CSTL-099	P/W	SB	EAGLE CREEK AT SC 642 5 MI SSE OF SUMMERVILLE

Sawmill Branch (CSTL-043) **-** Aquatic life uses are not supported due to dissolved oxygen excursions. There is a significant increasing trend in pH. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are not supported due to fecal coliform bacteria excursions.

Dorchester Creek (CSTL-013) **-** Aquatic life uses are partially supported due to dissolved oxygen excursions, which are compounded by a significant decreasing trend in dissolved oxygen concentration. Significant decreasing trends in five-day biochemical oxygen demand, turbidity, total phosphorus concentration, and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions.

Eagle Creek **(CSTL-099) -** Aquatic life uses are not supported due to turbidity excursions. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions.

Groundwater Quality

Well #	Class	Aquifer	Location
AMB-022	GB	BLACK CREEK/MIDDENDORF	SUMMERVILLE NO.5

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME / *FACILITY TYPE*	*PERMIT #* / *STATUS*
TOWN OF SUMMERVILLE MUNICIPAL	181002-6001 ---

Mining Activities

MINING COMPANY / *MINE NAME*	*PERMIT #* / *MINERAL*
L.J., INC. SHELLMORE FARMS MINE	0644-35 SAND/CLAY
ADDCO MINING CO. EVERGREEN MINE	0252-35 SAND

Growth Potential

There is a high potential for growth in this watershed, which contains portions of the Towns of Summerville and Ladson and the City of North Charleston. Water and sewer services are available in these growth areas.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

A TMDL was developed by SCDHEC and approved by EPA for ***Sawmill Branch*** water quality monitoring site CSTL-043 and for ***Dorchester Creek*** site CSTL-013 to determine the maximum amount of fecal coliform bacteria it can receive from nonpoint sources and still meet water quality standards. Most of Sawmill Branch and Dorchester Creek have been straightened and channelized. This separates them from their flood plains, removes large woody debris, and eliminates most shade. The primary sources of fecal coliform to the streams were determined to be runoff from urbanized land in the watershed. The TMDL states that a 96% reduction in fecal coliform loading from urban sources for Sawmill Branch and a 93% reduction for Dorchester Creek is necessary for the streams to meet the recreational use standard. For more detailed information on TMDLs, please visit the SCDHEC's Bureau of Water homepage at http://www.scdhec.gov/water and click on "Watersheds and TMDLs" and then "TMDL Program".

03050202-040

(Ashley River)

General Description

Watershed 03050202-040 is located in Dorchester and Charleston Counties and consists primarily of the ***Ashley River*** and its tributaries from Dorchester Creek to the Charleston Harbor. The watershed occupies 44,764 acres of the Lower Coastal Plain and Coastal Zone regions of South Carolina. The predominant soil types consist of an association of the Bohicket-Udorthents-Udipsamments-Yonges series. The erodibility of the soil (K) averages 0.20 and the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 45.0% urban land, 32.9% forested land, 13.4% nonforested wetland, 6.2% water, 1.3% scrub/shrub land, 0.7% forested wetland, and 0.5% agricultural land.

This segment of the Ashley River originates at Bacon Bridge and accepts drainage from the Dorchester Creek watershed. The river then flows past the Old Dorchester State Park and Middleton Gardens to receive drainage from Coosaw Creek, Olive Branch, and Sawpit Creek. Popperdam Creek enters the river near Magnolia Gardens, the Charleston U.S. Air Force Base, and the Municipal Airport. Further downstream, MacBeth Creek enters the river followed by Keivling Creek and Church Creek. The Ashley River is classified SA from Bacon Bridge to Church Creek, where it changes from SA to SA* (DO not less than 4 mg/l) and remains SA* to the entrance of Orangegrove Creek (Oldtown Creek). Between Church Creek and Orangegrove Creek, the Ashley River receives drainage from Bulls Creek (SA*), Brickyard Creek (SB), and Duck Island Canal (SA*). Downstream of Orangegrove Creek, the Ashley River reverts its classification to SA and drains into the Charleston Harbor and the Atlantic Ocean. In addition to the Old Dorchester State Park and the historic gardens and plantations, another natural resource in the watershed is the historic Charles Towne Landing State Park on the Ashley River near Bulls Creek. There are 237.9 acres of lake waters and 3,017.2 acres of estuarine areas in this watershed.

Surface Water Quality

Station #	Type	Class	Description
MD-049	P/SPRP	SA	ASHLEY RIVER AT MAGNOLIA GARDENS
MD-246	P/W	SA*	CHURCH CREEK MOUTH
MD-135	S/W	SA*	ASHLEY RIVER AT S.C. 7 (NORTH BRIDGE)
MD-052	P/INT	SA	ASHLEY RIVER AT SAL RR BRIDGE

Ashley River – There are three SCDHEC monitoring sites along this reach of the Ashley River. Aquatic life uses are not supported at the upstream site ***(MD-049)*** due to dissolved oxygen, turbidity, copper, and nickel excursions. Significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are not supported due to fecal coliform bacteria excursions. Aquatic life and recreational uses are fully supported at the midstream site ***(MD-135)***, and a significant decreasing trend in five-day biochemical oxygen demand and a significant increasing trend in dissolved oxygen concentration suggest improving conditions for these parameters. At the furthest downstream site ***(MD-052)***, aquatic life uses are fully

supported. A significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration suggest improving conditions for these parameters. There is a significant decreasing trend in pH. Recreational uses are fully supported at this site and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Church Creek (MD-246) - Aquatic life uses are fully supported. A significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand, turbidity, and total nitrogen concentration suggest improving conditions for these parameters. There is a significant increasing trend in pH. Recreational uses are partially supported; however, a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Charles Towne Landing State Park Pond - The pond has been treated annually from 1989-2001, and 2004 with aquatic herbicides in an attempt to control the growth of aquatic macrophytes that have impaired bank fishing and boating access. *Tilapia* were introduced in 1991, at a stocking rate of 200 fish/vegetated acre for a total of 1000 fish. The fish were restocked annually at the same rate and numbers from 1992 to1996.

A fish consumption advisory has been issued by the Department for mercury and includes portions of the Ashley River within this watershed (see advisory p.69). Fish tissue samples from the lower Ashley River (downstream of US 17) indicate no advisories are needed at this time.

NPDES Program

Active NPDES Facilities

RECEIVING STREAM ***FACILITY NAME*** ***PERMITTED FLOW @ PIPE (MGD)***	***NPDES#*** ***TYPE*** ***COMMENT***
ASHLEY RIVER G&S ROOFING PRODUCTS PIPE #: 001-003 FLOW: M/R	SC0002771 MINOR INDUSTRIAL
ASHLEY RIVER KINGS GRANT ON THE ASHLEY PIPE #: 001 FLOW: 0.238	SC0021911 MINOR DOMESTIC
ASHLEY RIVER TOWN OF SUMMERVILLE/WWTP PIPE #: 001 FLOW: 10.0	SC0037541 MAJOR DOMESTIC
ASHLEY RIVER MIDDLETON INN PIPE #: 001 FLOW: 0.014	SC0039063 MINOR DOMESTIC
BRICKYARD CREEK G&S ROOFING PRODUCTS	SC0002771 MINOR INDUSTRIAL

PIPE #: 003 FLOW: M/R

COOSAW CREEK	SC0038822
DORCHESTER COUNTY/LOWER DORCHESTER PLT	MAJOR DOMESTIC
PIPE #: 001 FLOW: 4.0	

Nonpoint Source Management Program

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
MCDIRT LLC.	1249-35
PALMETTO LAKE	SAND

Land Disposal Activities

Landfill Facilities

LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
MOORE DRUMS	--------
INDUSTRIAL	--------
CHARLESTON COUNTY DUMP	---------
MUNICIPAL	CLOSED
G&S ROOFING PRODUCTS	IWP-046
INDUSTRIAL	-------
LOCKWOOD BLVD. DUMP	-------
MUNICIPAL	CLOSED

Growth Potential

There is a high potential for growth in this watershed, which contains portions of the Cities of Charleston and North Charleston. The west bank of the Ashley River contains numerous historic structures including Middleton Place, Drayton Hall, Magnolia Gardens, Runnymead Plantation, and Charles Towne Landing State Park; all are important scenic, cultural, and tourism resources. Areas with a high potential for growth include Amberwood, Jerico on the Ashley, Summerfield, River Oaks, and Shadowmoss in Charleston County; and Coosaw Creek, Whitehall, Avanti Tract, Appian Landing, Bakers Landing, Indigo Fields, and Ricefield/Windsor Hill in Dorchester County. There are water and sewer services available to all these growth areas.

Watershed Protection and Restoration

Total Maximum Daily Loads (TMDLs)

Two TMDLs addressing dissolved oxygen were developed by SCDHEC for the ***Charleston Harbor Estuary:*** one covering the ***Ashley River*** and the other covering the Charleston Harbor, the Cooper River, and the Wando River. The Ashley River portion of the system contains watersheds 03050202-020 and 03050202-040. Dissolved oxygen violations at two stations along the Ashley River (CSTL-102 and MD-049) are considered natural due to conditions exacerbated by point and nonpoint

sources of pollution. A water quality model was developed to predict the impact of point source dischargers on dissolved oxygen concentration in the system. Results indicate the need for an overall 36% reduction in discharge of ultimate oxygen demand (UOD) to the Ashley River. For more detailed information on TMDLs, please visit the SCDHEC's Bureau of Water homepage at http://www.scdhec.gov/water and click on "Watersheds and TMDLs" and then "TMDL Program".

Special Models

Charleston Harbor System TMDLs

The modeling efforts for Charleston Harbor and its tributaries have been completed and phased TMDLs for the Ashley and the Cooper systems have been issued by the Department and approved by EPA Region 4. Interim TMDL limits were included in NPDES permits for a number of dischargers while final TMDL limits were included for some dischargers who were already meeting the final limits. Permits included compliance schedules that allowed the opportunity for additional modeling work to be completed before compliance with final limits is required. A group of dischargers working through the local Councils of Government has initiated another modeling effort that is currently underway. If this effort is successfully completed within the allotted time, the existing TMDLs will be revised and, as appropriate, new limits incorporated into NPDES permits for discharges covered by the TMDL.

03050202-050

(Stono River)

General Description

Watershed 03050202-050 is located in Dorchester and Charleston Counties and consists primarily of the ***Stono River*** and its tributaries from Log Bridge Creek to Wappoo Creek. The watershed occupies 157,400 acres of the Lower Coastal Plain and Coastal Zone regions of South Carolina. The predominant soil types consist of an association of the Meggett-Brookman-Bladen-Chisolm series. The erodibility of the soil (K) averages 0.15 and the slope of the terrain averages 1%, with a range of 0-6%. Land use/land cover in the watershed includes: 70.7% forested land, 7.0% forested wetland, 7.0% nonforested wetland, 5.8% urban land, 4.8% scrub/shrub land, 2.4% water, 2.2% agricultural land, and 0.1% barren land.

This segment of the Stono River, classified SFH, runs from Log Bridge Creek (near to its connection with the Edisto River Basin) to Wappoo Creek (which connects to the Ashley River), and drains into the lowest segment of the Stono River. Scotts Branch flows into Fishburne Creek, which in turn flows into Horse Savanna and Rantowles Creek. Rantowles Creek accepts drainage from the Wallace River (Caw Caw Swamp, Drayton Swamp, Caddin Bridge Swamp) and then flows into the Stono River. Log Bridge Creek (Middle Branch, Mellichamp Branch) also flows into the Stono River and shares drainage with the Wallace River. Downstream from the SCL Railroad Bridge, the Stono River incorporates the drainage of Long Branch Creek, Sandy Bay, and Elliott Cut (Wappoo Creek). Wappoo Creek is classified SB. There are a total of 89.6 stream miles, 161.9 acres of lake waters, and 2,389.5 acres of estuarine areas in this watershed.

Surface Water Quality

Station #	Type	Class	Description
MD-121	S/W	SFH	LOG BRIDGE CREEK AT SC 162
MD-202	P/INT	SFH	STONO RIVER AT S-10-20, 2 MI UPSTREAM OF CLEMSON EXP. STATION
MD-025	S/W	SFH	MOUTH OF ELLIOTT CUT AT EDGE WATER DR. (S-10-26 OFF HWY 17)
MD-020	P/W	SB	MOUTH OF WAPPOO CREEK BETWEEN CHANNEL MARKERS 3 & 4

Log Bridge Creek (MD-121) – Aquatic life uses are fully supported; however, there is a significant increasing trend in turbidity. There is a significant increasing trend in pH. This is a blackwater system, characterized by naturally low dissolved oxygen concentration conditions. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Stono River (MD-202) - Aquatic life uses are not supported due to dissolved oxygen and copper excursions. There is also a significant increasing trend in total phosphorus concentration. A significant increasing trend in dissolved oxygen and significant decreasing trends in five-day biochemical oxygen

demand and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are fully supported.

Elliott Cut (MD-025) - Aquatic life uses are partially supported due to dissolved oxygen excursions. Significant decreasing trends in five-day biochemical oxygen demand and turbidity suggest improving conditions for these parameters. Recreational uses are fully supported, and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Wappoo Creek (MD-020) - Aquatic life uses are fully supported. A significant increasing trend in dissolved oxygen and significant decreasing trends in five-day biochemical oxygen demand and total nitrogen concentration suggest improving conditions for these parameters. There is a significant decreasing trend in pH. Recreational uses are fully supported, and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Shellfish Monitoring Stations

Station #	Description
10B-08	CENTER OF ASHLEY RIVER – OFF COAST GUARD BASE
11-01	ELLIOT CUT AT STONO RIVER
11-02	STONO BRIDGE AT SC HWY 700
11-11	STONO RIVER (AIWW) AT MARKER 21A
11-12	STONO RIVER (AIWW) AT MARKER 27
11-16	STONO RIVER (AIWW) AT MARKER 51
11-17	STONO RIVER (LOG BRIDGE CREEK) AT MARKER 54
11-18	CONFLUENCE OF RANTOWLES CREEK AND THE STONO RIVER
11-20	ASHLEY RIVER AT WAPPOO CUT
11-27	STONO RIVER AT MOUTH OF PENNY CREEK NEAR MARKER 25

NPDES Program

Active NPDES Facilities

RECEIVING STREAM *FACILITY NAME* *PERMITTED FLOW @ PIPE (MGD)*	*NPDES#* *TYPE* *COMMENT*
MIDDLE BRANCH D&A PARTNERSHIP/RAVENEL MINE PIPE #: 001 FLOW: M/R	SCG730126 MINOR INDUSTRIAL

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
BEES FERRY MUNICIPAL	101001-1201 (101001-1101, ACTIVE DWP-124, DWP-083)
TRIDENT LANDFILL MUNICIPAL	DWP-005 CLOSED

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
TRULUCK CONSTRUCTION CO., INC. PLANT SITE	0196-19 SAND
MAD DOG MINING, INC. (FELDER) MAD DOG MINE #2	0645-19 SAND; SAND/CLAY
D&A PARTNERSHIP RAVENEL MINE	1089-19 SAND
PALMETTO SAND CO., INC. FISHBURNE CREEK MINE	1092-35 SAND
MURRAY MINES, INC. TREE HOUSE MINE	1110-35 SAND
COASTAL MINING CO. PERRY MINE	1483-35 SAND
COASTAL CONTAINER CO., INC. PERRY MINE	1461-35 SAND
ROGERS & SON CONSTRUCTION CO. CONE UNIT/ASHLEY DISTR.	1466-35 SAND
KEITH BISHOP LAND CLEARING JOELS LAKE MINE	1290-19 SAND
KEITH BISHOP LAND CLEARING JOELS SECOND LAKE	1441-19 SAND
JAMES COOK COOK #1	1295-19 SAND
DAVID P. RICHARDSON RICHARDSON MINE	1532-19 SAND
HOME BUILDERS, INC. TK DIRT WORKS	1277-19 SAND
CHARLESTON COUNTY KINSEY-BLAKE BORROW PIT	0314-19 SAND; SAND/CLAY
W. FRAZIER CONSTRUCTION CO., INC. (DIRTCO) MURRAY WOODS PIT	0512-19 SAND/CLAY
ISLAND CONSTRUCTION CO., INC. TREMONT MINE	0660-19 SAND

Growth Potential

This watershed contains the Towns of Ravenel and Hollywood and a portion of the City of Charleston. The areas with a high potential for growth in the watershed include Stono Ferry in Hollywood; Rushland Plantation, Headquarters Plantation, and Fenwick Acres on Johns Island; and Bees Landing and Essex Farms in the City of Charleston. Water and sewer services are available to all these growth areas.

03050202-060

(Atlantic Intracoastal Waterway)

General Description

Watershed 03050202-060 is located in Charleston County and consists primarily of the ***Atlantic Intracoastal Waterway*** and its tributaries from the Ben Sawyer Bridge to the South Santee River. The watershed occupies 118,510 acres of the Coastal Zone region of South Carolina. The predominant soil types consist of an association of the Bohicket-Capers-Chipley series. The erodibility of the soil (K) averages 0.20 and the slope of the terrain averages 1%, with a range of 0-2%. Land use/land cover in the watershed includes: 41.5% nonforested wetland, 35.4% forested land, 16.1% water, 3.0% urban land, 2.2% scrub/shrub land, 0.8% forested wetland, 0.5% agricultural land, and 0.5% barren land.

This watershed contains a portion of the Atlantic Intracoastal Waterway (AIWW), which flows past numerous sea islands and the tidally influenced creeks that separate them. This reach of the AIWW is classified SFH. Inlet Creek, Swinton Creek, and Conch Creek located near Sullivans Island, drain to the Atlantic Ocean via Breach Inlet. Morgan Creek, Seven Reaches, and Cedar Creek flow into Meeting Reach (AIWW). Seven Reaches also drains into Gray Sound (SFH) as does Hamlin Creek and Long Creek. Hamlin and Long Creeks also flow into Hamlin Sound (SFH), which in turn drains into Copahee Sound (ORW) and Bullyard Sound (ORW). Dewees Creek collects drainage from Bullyard Sound and Hamlin Sound, together with Old House Creek and Horsebend Creek, and flows through Dewees Inlet (SFH) to the Atlantic Ocean.

Capers Creek, Watermelon Creek, Toomer Creek, and Whiteside Creek drain to the ocean through Capers Inlet (ORW). The Santee Pass connects Capers Creek to Mark Bay (ORW) and drains to the ocean via Price Inlet (ORW). Other streams draining into Price Inlet include Price Creek, Clauson Creek, and Bull Narrows. Bull Narrows also flows into Sewee Bay (SFH) and Hickory Bay. Back Creek connects Sewee Bay to Bull Creek (Summerhouse Creek, Jack Creek), which flows into Bull Harbor and Bulls Bay (ORW). Other streams draining into Bull Harbor and Bulls Bay include Anderson Creek, Blind Creek, Venning Creek, Belvedere Creek, Vanderhorst Creek, Saltpond Creek, and Graham Creek.

Bell Creek (Cooter Creek, Withey Wood Canal) and Steed Creek join to form Awendaw Creek and Lake Awendaw (125 acres), which flows into the Harbor River (AIWW) and into Bulls Bay. Other streams draining into the Harbor River from the mainland, near the Town of McClellanville, include Sandy Point Creek, Doe Hall Creek, Tibwin Creek, and Long Creek. Bull River (Sett Creek, Little Sett Creek) and Five Fathom Creek (Clark Creek, Key Creek, Key Bay, Santee Path Creek, Papas Creek, Little Papas Creek, Matthews Creek, Town Creek, Clubhouse Creek) drain directly into Bulls Bay. Five Fathom Creek is classified SFH. Jeremy Creek flows into the AIWW across the waterway from Five Fathom Creek. Clubhouse Creek connects Five Fathom Creek to Oyster Bay and Muddy Bay (Nellie Creek, Joe and Ben Creek, Shrine Creek, Horsehead Creek).

The Romain River is formed at the confluence of Santee Path Creek and Nellie Creek, and accepts drainage from Key Creek (Bay Creek), Muddy Bay, and Slack Reach (Devils Den Creek, Horsehead Creek, Mill Den Creek) before flowing into Cape Romain Harbor (ORW). Key Creek also drains into the ocean via Raccoon Creek and Key Inlet. Other streams draining in Cape Romain Harbor include Congaree Boat Creek (Joe and Ben Creek), Casino Creek (Mill Creek, Needles Eye Creek), Deepwater Creek, and Alligator Creek (Ramhorn Creek). There are 2,720.3 acres of lake waters and 13,296.5 acres of estuarine areas in this watershed. Additional natural resources in the watershed include the Cape Romain National Wildlife Refuge (55,000 acres) and portions of the Frances Marion National Forest.

Surface Water Quality

Station #	Type	Class	Description
MD-265	INT	SFH/ORW	Alligator Creek at State shellfish ground
MD-266	INT	SFH/ORW	Casino Creek at closure line
RT-02016	RT02	ORW	East Fork of Devils Den Creek headwaters
MD-203	P/W	SFH	Jeremy Creek near boat landing at McClellanville Town Hall
RT-01623	RT01	SFH	Matthews Creek Tributary, 1 mi S of McClellanville
MD-267	INT	SFH	Five Fathom Creek at Bull River
RO-02008	RO02	SFH	Five Fathom Creek near mouth of Santee Path Creek
MD-250	W	SFH	Awendaw Creek at US 17
MD-268	W/INT	SFH	Awendaw Creek at marker #57
RT-01668	RT01	SFH	Vanderhorst Creek, 11.75 mi SW of McClellanville
MD-269	INT	SFH	Sewee Bay at Moores Landing
RT-02004	RT02	ORW	Back Creek Tributary on Bull Island
MD-270	INT	ORW	Bullyard Sound at Marker #104
MD-271	INT	SFH	Hamlin Sound
MD-272	INT	SFH	Lower Hamlin Creek at site of new bridge
RT-02006	RT02	SFH	Conch Creek, 1 mi from Sawyer Bridge
MD-069	INT	SB/SFH	AIWW at Sc 703, E of Mt. Pleasant

Alligator Creek (MD-265) **-** Aquatic life and recreational uses are fully supported. This is a blackwater system, characterized by naturally low dissolved oxygen concentration conditions. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations.

Casino Creek (MD-266) **-** Aquatic life and recreational uses are fully supported. This is a blackwater system, characterized by naturally low dissolved oxygen concentration conditions. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations.

Devils Den Creek (RT-02016) **-** Aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute criterion. This is a blackwater system, characterized by naturally low dissolved oxygen concentration conditions. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. Recreational uses are fully supported.

Jeremy Creek (MD-203) – Aquatic life uses are not supported due to dissolved oxygen and turbidity excursions, compounded by a significant increasing trend in turbidity. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Matthew Creek Tributary (RT-01623) - Aquatic life uses are not supported due to turbidity excursions. This is a blackwater system, characterized by naturally low dissolved oxygen concentration conditions. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations. Recreational uses are fully supported.

Five Fathom Creek **-** There are two SCDHEC monitoring sites along Five Fathom Creek, and aquatic life and recreational uses are fully supported at both sites ***(MD-267, RO-02008)***. This is a blackwater system, characterized by naturally low dissolved oxygen concentration conditions. Although dissolved oxygen excursions occurred at the upstream site, they were typical of values seen in blackwater systems and were considered natural, not standards violations.

Awendaw Creek - There are two SCDHEC monitoring sites along Awendaw Creek, and aquatic life uses are fully supported at both sites ***(MD-250, MD-268)***. This is a blackwater system, characterized by naturally low pH and dissolved oxygen concentration conditions. Although pH excursions occurred at the upstream site and dissolved oxygen excursions occurred at both sites, they were typical of values seen in blackwater systems and were considered natural, not standards violations. Recreational uses are not supported at the upstream site ***(MD-250)*** due to fecal coliform bacteria excursions and fully supported at the downstream site ***(MD-268)***.

Vanderhorst Creek (RT-01668) - Aquatic life and recreational uses are fully supported. This is a blackwater system, characterized by naturally low dissolved oxygen concentration conditions. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations.

Sewee Bay (MD-269) - Aquatic life and recreational uses are fully supported.

Back Creek Tributary (RT-02004) - Aquatic life and recreational uses are fully supported. This is a blackwater system, characterized by naturally low dissolved oxygen concentration conditions. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations.

Bullyard Sound (MD-270) - Aquatic life and recreational uses are fully supported.

Hamlin Sound (MD-271) - Aquatic life and recreational uses are fully supported.

Hamlin Creek (MD-272) - Aquatic life and recreational uses are fully supported. This is a blackwater system, characterized by naturally low dissolved oxygen concentration conditions. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations.

Conch Creek (RT-02006) - Aquatic life and recreational uses are fully supported.

Atlantic Intracoastal Waterway (MD-069) – The water quality analysis is identical for both SFH and SB classifications. Aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute criterion. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration, and total nitrogen concentration suggest improving conditions for these parameters. There is a significant decreasing trend in pH. Recreational uses are fully supported and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Santee Coastal Reserve Pond - The pond was treated in 1994, 1995, 1997-1999, and 2002-2005 with aquatic herbicides to control aquatic plant growth and reclaim recreational areas for waterfowl management and public access and use.

Santee Delta Plantation Wildlife Management Area – The management area was treated in 2004 and 2005 with aquatic herbicides to control aquatic plant growth and allow public access and use.

A fish consumption advisory has been issued by the Department for mercury and includes the Atlantic Ocean edging this watershed (see advisory p.69). Fish tissue samples from Muddy Bay and Cape Romain indicate no advisories are needed at this time.

Groundwater Quality

Well #	Class	Aquifer	Location
AMB-084	GB	SURFICIAL SANDS	MCCLELLANVILLE

Shellfish Monitoring Stations

Station #	Description
06B-07	ALLIGATOR CREEK AT MARKER 26
06B-08	CASINO CREEK AT MARKER 26
06B-09	DUPREE CREEK – 500 FT N OF NEW DOCK
06B-10	AIWW AT MARKER 32
06B-12	ALLIGATOR CREEK STATE SHELLFISH GROUND
06B-15	CASINO CREEK AT CAPE ROMAIN HARBOR
06B-16	CASINO CREEK MIDWAY BETWEEN STATION 19&24 (AT SMALL S.BOUND UNNAMED CREEK ON RIGHT)
06B-17	CONGAREE BOAT CREEK AT TOWER CREEK
06B-18	CONFLUENCE OF DUPREE CREEK AND CLUBHOUSE CREEK
06B-19	CONFLUENCE OF CASINO CREEK AND SHRINE CREEK
06B-20	1,000 YDS UPSTREAM DUPREE CREEK FROM CLUBHOUSE CREEK
06B-21	CONFLUENCE OF ALLIGATOR CREEK AND RAMHORN CREEK

06B-22	Confluence of Ramhorn Creek and Mill Creek
06B-23	Confluence of Shrine Creek and Congaree Boat Creek
06B-24	Confluence of Casino Creek and Congaree Boat Creek
06B-25	Confluence of Horsehead Creek and unnamed creek at lower end of Horsehead Island
06B-26	Confluence of Shrine Creek and unnamed Creek N. of Muddy Bay
06B-27	Confl. of first large creek on the left, with Congaree Boat Creek, traveling SE of Sta.23
07-01	Venning Creek adjacent to marker 67
07-02	Graham Creek at marker 64
07-03	Awendaw Creek at marker 57
07-04	Harbor River at marker 48
07-04A	Harbor River at Bulls Bay
07-05	Tibwin Creek at marker 42
07-06	Five Fathom Creek at marker 20
07-06A	Five Fathom Creek at Bull River
07-07	Jeremy Creek opposite Fire Tower
07-08	Clubhouse Creek – ¼ mi N. of Five Fathom Creek
07-08A	Oyster Bay at Muddy Bay
07-09	Confluence of Doehall Creek with AIWW – N. of marker 46
07-11	Five Fathom Creek at marker 11
07-12	Confluence of Raccoon Creek and Romain River
07-13	Romain River at confluence of "S" Creek
07-14	Doehall Creek – thrid bend
07-15	Sandy Point Creek – fourth bend
07-16	Confluence of Romain River and Santee Path Creek
07-17	Second small creek N. of marker 26 in Five Fathom Creek
07-18	Marker 65 in AIWW
07-19	AIWW at confluence with unnamed creek, 1.5 mi SW of Graham Creek
08-01	Morgan Creek at northernmost confluence with AIWW – adjacent to marker 115
08-02	Hamlin Sound
08-03	Dewees Inlet at AIWW – N. of marker 110
08-04	Bullyard Sound - marker 104
08-05	Whiteside Creek - marker 96
08-06	Mark Bay - marker 90
08-07	Prices Inlet
08-08	AIWW - marker 82
08-09	Moores Landing Dock at marker 74
08-10	marker 116 N. of Isle of Palms STP outfall in AIWW
08-11	Isle of Palms STP outfall at 41ST Street
08-12	Morgan Creek at 41ST Street Marina
08-13	Sewee Bay POG – Sewee Bay at Hickory Bay
08-14	Dewees Island – ¼ mi up Horsebend Creek
08-15	Dewees Island – Mouth of Watermelon Creek
08-16	Confluence of Seven Reaches and Gray Bay
08-17	SW Copahee Sound at Porcher Bluff Creek
08-18	One half mi up Cedar Creek from Dewees Inlet
08-19	Confluence of Toomer Creek at Copahee sound
08-20	Upper reaches of Whiteside Creek
08-21	Upper reaches of Clawson Creek
08-22	Confluence of Capers Creek and Santee Pass
08-23	Confluence of Bull Creek and Back Creek
08-24	Anderson Creek at main fork above confluence with Bulls Bay
08-25	Palmetto Point Creek adjacent to marker 84
09A-01	Hamlin Creek at its confluence with AIWW
09A-02	Upper end of Hamlin Creek at POG
09A-03	Upper end of Swinton Creek
09A-05	Shortcut – Swinton Creek
09A-06	Inlet Creek and Gentide Creek
09A-07	Inlet Creek at its confluence with AIWW
09A-08	Breech Inlet

09A-09	BEN SAWYER BRIDGE
09A-11	END OF 10TH STREET AT HAMLIN CREEK
09A-12	SWINTON CREEK AT ITS CONFLUENCE WITH HAMLIN CREEK
09A-14	SWINTON CREEK AT ITS CONFLUENCE WITH AIWW
09A-15	AIWW BETWEEN INLET AND SWINTON CREEKS
09A-17	CONCH CREEK STATE SHELLFISH GROUND – MT. PLEASANT SIDE
09A-17A	CONCH CREEK STATE SHELLFISH GROUND – SULLIVANS ISLAND SIDE
09A-18	AIWW ADJACENT TO WILD DUNES GOLF COURSE STORM DRAINAGE OUTFALL
09A-19	AIWW AT 25TH STREET – ISLE OF PALMS
09A-20	CONCH CREEK AT LOFTON CREEK
09A-21	INLET CREEK 100 YDS PAST FIRST BEND
09A-22	AIWW AT MARKER 118
09A-23	UPPER REACHES OF CONCH CREEK
09A-24	UPPER REACHES OF INLET CREEK
09A-25	UPPER REACHES OF SWINTON CREEK
09A-26	HAMLIN CREEK ½ WAY BETWEEN STATIONS 1&2
09A-27	INLET CREEK WEST OF AIWW AT FIRST BEND
09A-28	SWINTON CREEK WEST OF AIWW AT SECOND BEND
09A-29	LOWER HAMLIN CREEK AT SITE OF NEW BRIDGE
09A-30	UPPER INLET CREEK AT JENNIE CREEK
09A-31	BAY AT END OF UPPER INLET CREEK
09A-32	FIRST CREEK ON RIGHT DOWNSTREAM FROM STATION 6
09A-33	FIRST LARGE CREEK UP INLET CREEK FROM STATION 8
09A-34	AIWW AT CONFLUENCE WITH SULLIVANS ISLAND NARROWS
09A-35	300 YDS UPSTREAM FROM STATION 6
09A-36	CONCH CREEK AT ITS CONFLUENCE WITH AIWW
09A-37	LOWER CONCH CREEK AT MARINA CLOSURE ZONE

NPDES Program

Active NPDES Facilities

RECEIVING STREAM ***FACILITY NAME*** ***PERMITTED FLOW @ PIPE (MGD)***	***NPDES#*** ***TYPE*** ***COMMENT***
HAMLIN CREEK CITY OF ISLE OF PALMS W&S PIPE #: 001 FLOW: M/R	SC0043583 MINOR DOMESTIC
MEETING REACH CITY OF ISLE OF PALMS/FOREST TRAILS SD PIPE #: 001 FLOW: 0.30	SC0025283 MINOR DOMESTIC
DEWEES CREEK TOWN OF DEWEES ISLAND WTP PIPE #: 001 FLOW: 0.025	SC0046817 MINOR DOMESTIC
CLAUSON CREEK LOWCOUNTRY DIRT/SCHAFFER MINE PIPE #: 001 FLOW: M/R	SCG730102 MINOR INDUSTRIAL
AIWW UNNAMED TRIBUTARY ST JAMES/SANTEE ELEM. PIPE #: 001 FLOW: M/R	SCG645033 MINOR DOMESTIC

AIWW UNNAMED TRIBUTARY CHARLESTON CPW/BEAN PIT PIPE #: 001 FLOW: M/R	SCG730226 MINOR INDUSTRIAL
AIWW UNNAMED TRIBUTARY TOWN OF MT PLEASANT/CENTER ST. & RR RD PIPE #: 004 FLOW: M/R	SC0040771 MAJOR DOMESTIC

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME ***FACILITY TYPE***	***PERMIT #*** ***STATUS***
PINCKNEY ROAD DUMP MUNICIPAL	------- CLOSED
CITY OF ISLE OF PALMS DUMP MUNICIPAL	------- CLOSED

Land Application Sites

LAND APPLICATION ***FACILITY NAME***	***PERMIT #*** ***YPE***
TILE FIELD DEWEES ISL. DEV./DEWEES UTILITY CORP.	ND0069329 DOMESTIC
SPRAY ON GOLF COURSE CITY OF ISLE OF PALMS/WILD DUNES BEACH	ND0062260 DOMESTIC
SPRAYFIELD CHARLESTON COUNTY/LINCOLN HIGH SCH	ND0073016 DOMESTIC

Mining Activities

MINING COMPANY ***MINE NAME***	***PERMIT #*** ***MINERAL***
G & H HOLDINGS LLC G&H POND	1388-19 SAND
OL THOMPSON CONSTRUCTION CO. WILLS POND	1356-19 SAND
CHARLESTON COUNTY PUBLIC WORKS BEAN PIT	1159-19 SAND

Growth Potential

There is a high potential for growth in this watershed, which contains the City of Isle of Palms, the Towns of Awendaw and McClellanville, and portions of the Towns of Mt. Pleasant and Sullivans Island. Several suburban growth areas surround the City of Charleston. Some of the larger planned developments include Wild Dunes, Shell Point, Hidden Lakes, Seaside Farms, Palmetto Fort, and the Charleston National Country Club. All growth areas in the watershed have water and sewer services

available. Sources of tourism in this watershed include Patriots Point and Fort Moultrie. Although the McClellanville area experiences scattered low density development, significant growth is not anticipated.

Watershed Restoration and Protection

Special Projects

Graham Creek Restoration Project

SCDHEC's Nonpoint Source Monitoring Team in conjunction with the Shellfish Sanitation Section have initiated a special effort to restore certain shellfish waters that currently do not meet standards. Graham Creek, which connects the AIWW with Bulls Bay, is currently classified as Restricted due to elevated bacteria levels. Restoration of the shellfish resource in these areas may be the most cost effective considering the potential resource is large and the impacts may be more easily eliminated than in more developed watersheds. Special intensive monitoring and field surveys have been conducted in these watersheds. In cooperation with the Charleston County Natural Resources Conservation Service, results from the monitoring will be used to target remediation of identified sources of bacteria. Similar projects have been focused on the areas surrounding Abbapoola and Toogoodoo Creeks south of Charleston.

03050202-070

(Charleston Harbor/Stono River)

General Description

Watershed 03050202-070 is located in Charleston County and consists primarily of the ***Charleston Harbor*** and its tributaries, and the ***Stono River*** with its tributaries from Wappoo Creek to the Atlantic Ocean. The watershed occupies 81,611 acres of the Coastal Zone region of South Carolina. The predominant soil types consist of an association of the Bohicket-Capers-Kiawah-Foxworth series. The erodibility of the soil (K) averages 0.20 and the slope of the terrain averages 1%, with a range of 0-6%. Land use/land cover in the watershed includes: 28.1% nonforested wetland, 25.2% forested land, 21.9% water, 10.1% urban land, 9.0% scrub/shrub land, 4.6% agricultural land, 0.8% forested wetland, and 0.3% barren land.

This segment of the Stono River, classified SFH, accepts drainage from the upper Stono River watershed (03050202-050), flows between Johns Island and James Island, and then flows through the Stono Inlet to the Atlantic Ocean. On the Johns Island side of the river, the Stono River receives drainage from Pennys Creek, Hut Creek, Abbapoola Creek, Alligator Creek, and the Kiawah River. The Kiawah River accepts drainage from Captain Sams Creek, Haulover Creek, Bryans Creek, and Chaplin Creek. The Kiawah River drains directly into the Atlantic Ocean through Captain Sams Inlet. Bass Creek (Cinder Creek) drains into the Stono River from Kiawah Island.

Streams draining into the Stono River from James Island include James Island Creek or Ellis Creek (Simpson Creek, Wolfpit Run), Holland Island Creek, and Green Creek. The Folly River (Folly Creek, Oak Island Creek, Robbins Creek, King Flats Creek, Cutoff Reach, Cole Creek), classified SFH, drains into the mouth of the Stono River. Robbins Creek and King Flats Creek are also connected to the Stono River through Green Creek. Lighthouse Creek (Block Island Creek, Rat Island Creek, Ft. Johnson Creek, First Sister Creek, Second Sister Creek) flows between Folly Island and Morris Island and through Lighthouse Inlet to the Atlantic Ocean. Ft. Johnson Creek connects the Lighthouse Creek drainage to Clark Sound (Seaside Creek, Secessionville Creek). The sound drains into Charleston Harbor through Schooner Creek near Fort Sumter. Charleston Harbor is classified SB. The Ashley River watershed (03050202-040) draining into the harbor is classified SA and the Cooper River watershed (03050201-050) draining into the harbor is classified SB. Also draining in the Charleston Harbor is Dill Creek, Horse Creek, Shem Creek (SB), The Cove (Cove Creek), Bass Creek, and Parrot Point Creek. There are 754.1 acres of lake waters and 13,852.3 acres of estuarine areas in this watershed.

Surface Water Quality

Station #	Type	Class	Description
MD-069	INT	SB/SFH	AIWW AT SC 703, E OF MT. PLEASANT
MD-071	P/SPRP	SB	SHEM CREEK AT BRIDGE ON US 17
MD-247	P/INT	SB	CHARLESTON HARBOR NEAR MT. PLEASANT WWTP DIFFUSER
MD-034	P/W	SA	RT. BANK OF ASHLEY R. BETW MOUTH OF JAMES ISL. CK & DILL CK
MD-165	P/INT	SB	CHARLESTON HARBOR AT FT.JOHNSON PIER AT MARINE SCIENCE LAB
RO-02016	RO02	SB	CHARLESTON HARBOR, 0.1 MI E OF FT. JOHNSON
MD-048	P/W	SB	S. CHANNEL CHAS HARBOR OFF FT JOHNSON , BELL BUOY 28

RT-01644	RT01	SB	CLARK SOUND, 4 MI S OF CHARLESTON
RT-02008	RT02	SFH	SECOND SISTER CREEK, 0.1 MI FROM CONFL WITH LIGHTHOUSE CREEK
MD-274	INT	SFH	FOLLY CREEK, AT SECESSIONVILLE POLLUTION LINE
MD-130	INT	SFH	FOLLY CREEK AT SC 171
MD-026	P/W	SFH	STONO RIVER AT SC 700
RO-01144	RO01	SFH	STONO RIVER, 7.5 MI SW OF CHARLESTON
MD-206	S/INT	SFH	STONO RIVER AT ABBAPOOLA CREEK
MD-208	S/W	SFH	STONO RIVER MOUTH AT BUOY 10 OFF SANDY POINT
MD-273	INT	SFH	KIAWAH RIVER ON THE FLATS
MD-207	S/W	SFH	KIAWAH RIVER MOUTH AT STONO RIVER
RT-01642	RT01	SFH	TRIBUTARY TO STONO INLET, 11 MI SW OF CHARLESTON

Atlantic Intracoastal Waterway (MD-269) – Although mapped in 03050202-060, the waters reflect this watershed as well. The water quality analysis is identical for both SFH and SB classifications. Aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute criterion. Significant decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration, and total nitrogen concentration suggest improving conditions for these parameters. There is a significant decreasing trend in pH. Recreational uses are fully supported and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Shem Creek (MD-071) – Aquatic life uses are not supported due to occurrences of copper in excess of the aquatic life acute criterion. Significant decreasing trends in five-day biochemical oxygen demand, turbidity, and total nitrogen concentration suggest improving conditions for these parameters. Recreational uses are partially supported due to fecal coliform bacteria excursions.

Charleston Harbor – There are four SCDHEC monitoring sites within the Charleston Harbor, and recreational uses are fully supported at all sites. Aquatic life uses are fully supported at ***MD-247.*** There is a significant decreasing trend in pH. A significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand, total phosphorus concentration, total nitrogen concentration, and fecal coliform bacteria concentration suggest improving conditions for these parameters.

Aquatic life uses are not supported at ***MD-165*** due to occurrences of copper in excess of the aquatic life acute criterion. There is a significant decreasing trend in pH. A significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand, total nitrogen concentration, and fecal coliform bacteria concentration suggest improving conditions for these parameters.

Aquatic life uses are fully supported at ***RO-02016***. Aquatic life are again fully supported at ***MD-048.*** There is a significant decreasing trend in pH. A significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand, total nitrogen concentration, and fecal coliform bacteria concentration suggest improving conditions for these parameters. *Fish tissue samples from the Charleston Harbor indicate no advisories are needed at this time.*

Ashley River (MD-034) - Aquatic life and recreational uses are fully supported. A significant increasing trend in dissolved oxygen concentration and significant decreasing trends in five-day biochemical oxygen demand, total nitrogen concentration, and fecal coliform bacteria concentration suggest improving conditions for these parameters. *Fish tissue samples from the lower Ashley River (downstream of US 17) indicate no advisories are needed at this time.*

Clark Sound (RT-01644) – Aquatic life and recreational uses are fully supported.

Second Sister Creek (RT-02008) – Aquatic life and recreational uses are fully supported. This is a blackwater system, characterized by naturally low dissolved oxygen concentration conditions. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations.

Folly Creek (MD-274) – Aquatic life and recreational uses are fully supported. This is a blackwater system, characterized by naturally low dissolved oxygen concentration conditions. Although dissolved oxygen excursions occurred, they were typical of values seen in blackwater systems and were considered natural, not standards violations.

Folly River (MD-130) – Aquatic life and recreational uses are fully supported.

Stono River – There are four SCDHEC monitoring sites along the Stono River, and recreational uses are fully supported at all sites. At the furthest upstream site ***(MD-026)***, aquatic life uses are not supported due to occurrences of dissolved oxygen and copper excursions. Significant decreasing trends in five-day biochemical oxygen demand, total nitrogen concentration, and fecal coliform bacteria concentration suggest improving conditions for these parameters. Aquatic life uses are fully supported at the next site downstream ***(RO-01144)***.

Further downstream ***(MD-206)***, aquatic life uses are partially supported due to dissolved oxygen excursions. A significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. There is a significant decreasing trend in pH. At the furthest downstream site ***(MD-208)***, aquatic life uses are fully supported and significant decreasing trends in five-day biochemical oxygen demand and fecal coliform bacteria concentration suggest improving conditions for these parameters. There is a significant decreasing trend in pH.

Kiawah River - There are two SCDHEC monitoring sites along the Kiawah River. At the upstream site ***(MD-273)***, aquatic life and recreational uses are fully supported. Aquatic life uses are also fully supported at the downstream site ***(MD-207),*** and a significant decreasing trend in five-day biochemical oxygen demand suggests improving conditions for this parameter. There is a significant decreasing trend in pH. Recreational uses are fully supported and a significant decreasing trend in fecal coliform bacteria concentration suggests improving conditions for this parameter.

Stono Inlet Tributary (RT-01642) – Aquatic life uses are not supported due to turbidity excursions. Recreational uses are fully supported.

A fish consumption advisory has been issued by the Department for mercury and includes the Atlantic Ocean edging this watershed (see advisory p.69).

Shellfish Monitoring Stations

Station #	Description
09A-10	MARKER 126 – AIWW AT OLD PITT STREET BRIDGE
10A-02	FOLLY CREEK BRIDGE
10A-03	BOWEN ISLAND DOCK IN FOLLY CREEK
10A-04	BACKMAN CREEK AT FOLLY CREEK
10A-05	KING FLATS AT FOLLY CREEK
10A-06	OPPOSITE LITTLE ISLAND IN FOLLY CREEK
10A-07	NORTH BOUNDARY OF PROHIBITED AREA AT FOLLY MARINA
10A-08	FOLLY RIVER BRIDGE
10A-09	LAST DOCK NORTH IN FOLLY RIVER
10A-11	RAT ISLAND CREEK AT CONFLUENCE WITH FIRST CREEK ON LEFT FROM LIGHTHOUSE CREEK
10A-13	LIGHTHOUSE CREEK AT CONFLUENCE WITH FOLLY CREEK
10A-15	SECESSIONVILLE CREEK AT PRIVATE DOCKS
10A-15A	FOLLY CREEK AT CONFLUENCE WITH SECESSIONVILLE CREEK
10A-16	CLARK SOUND AT OCEAN VIEW FLATS
10A-16A	FLUDD'S CREEK AT CLARK SOUND
10A-18	MOUTH OF SCHOONER CREEK
10A-18A	CHARLESTON HARBOR AT SCHOONER CREEK
10A-19	JUST INSIDE CLARK SOUND FROM SCHOONER CREEK
10A-20	BACKMAN'S COMMERCIAL DOCK IN BACKMAN CREEK
10A-22	FOLLY RIVER STATE SHELLFISH GROUND OPPOSITE FOLLY ISLAND
10A-23	LIGHTHOUSE CREEK STATE SHELLFISH GROUND AT MOUTH OF FIRST SISTER CREEK
10A-24	COLE CREEK STATE SHELLFISH GROUND
10A-25	FOLLY MARINA
10A-26	JUST SEAWARD OF CONFLUENCE OF LIGHTHOUSE CREEK AND FOLLY RIVER IN LIGHTHOUSE CREEK
10A-27	MIDWAY STATIONS 18&18A
10A-28	MOUTH OF SMALL CREEK LEADING TO BACK OF BLOCK ISLAND
10A-29	OUTFALL OF MORRIS ISLAND DISCHARGE
10A-30	SECOND BEND IN RATHALL CREEK
10A-31	UPPER REACHES OF RAT ISLAND CREEK NW OF STATION 11
10A-32	BLOCK ISLAND CREEK – 100 YDS S.OF SPILT FORM SPOIL AREA
10A-33	CONFLUENCE OF LIGHTHOUSE CREEK AND CLARK SOUND
10A-34	THE FIRST DOCK IN SECESSIONVILLE CREEK AT ITS CONFLUENCE WITH CLARK SOUND
10A-35	RIGHT FORK OF SCHOONER CREEK, MIDDLE OF DOCKS, ACROSS FROM PARROT POINT DEVELOPMENT
10B-01	MOUTH OF CHARLESTON HARBOR AT BUOY #25
10B-02	200 YDS EAST OF MOUTH OF FT. JOHNSON BOAT BASIN
10B-02A	OFF THE END OF JAMES ISLAND YACHT CLUB DOCK
10B-03	MOUTH OF JAMES ISLAND CREEK
10B-04	ASHLEY RIVER AT BUOY #@ - RED NUN BUOY
10B-05	OFF THE TIP OF THE BATTERY AT WHITE DANGER MARKER
10B-07	OFF OLD PIER PILINGS AT RUILS OF CASTLE PINKNEY
10B-09	MOUTH OF SHEM CREEK – RED MARKER 16
10B-11	AIWW AT TIP OF SULLIVANS ISLAND GREEN MARKER 137
10B-12	MT. PLEASANT WWTP OUTFALL
11-03	DOCKS BETWEEN MARKERS 10&11 IN STONO RIVER
11-05	MOUTH OF ABBAPOOLA CREEK
11-06	ABBAPOOLA CREEK AT FIRST LARGE BEND

11-0A6	ABBAPOOLA CREEK AT CONFLUENCE WITH SMALL CREEK ON WEST BACK AT 7TH BEND
11-07	GREEN CREEK AT STONO RIVER
11-08	MOUTH OF KIAWAH RIVER
11-10	KIAWAH RIVER AT KIAWAH ISLAND BOAT LANDING
11-21	SOUTH KIAWAH RIVER ON THE FLATS
11-22	KIAWAH RIVER POG AT MINGO POINT
11-23	CAPTAIN SAMS CREEK AND KIAWAH RIVER
11-24	CAPTAIN SAMS CREEK AT S. TIP OF LONG ISLAND
11-28	MULLETT HALL CREEK 150 YDS FROM MOUTH AT FORK
11-29	KIAWAH RIVER BETWEEN BRYANS CREEK AND MULLETT HALL CREEK
11-30	KIAWAH RIVER AT MOUTH OF BRYANS CREEK
11-31	BASS CREEK AT CONFLUENCE WITH KIAWAH RIVER
11-32	BASS CREEK AT CONFLUENCE WITH CINDER CREEK
11-33	SOL LEGARE BOAT LANDING
11-34	CINDER CREEK AT PUBLIC DOCK – 3RD BEND FROM CONFLUENCE WITH BASS CREEK
11-35	BASS CREEK AT PUBLIC DOCK – 5TH BEND FROM CONFLUENCE WITH CINDER CREEK

NPDES Program

Active NPDES Facilities

RECEIVING STREAM ***FACILITY NAME*** ***PERMITTED FLOW @ PIPE (MGD)***	***NPDES#*** ***TYPE*** ***COMMENT***
CHARLESTON HARBOR TOWN OF MT PLEASANT/CENTER ST. & RR RD PIPE #: 001 FLOW: 3.7 PIPE #: 002 FLOW: 6.0 PIPE #: 003,005 FLOW: M/R PIPE #: 006 FLOW: 0.0349	SC0040771 MAJOR DOMESTIC
ASHLEY RIVER INTO CHARLESTON HARBOR CHARLESTON CPW/PLUM ISLAND PIPE #: 001 FLOW: 36.0	SC0021229 MAJOR DOMESTIC
CHARLESTON HARBOR NATIONAL PARK SERVICE/FT SUMTER NATL. MT PIPE #: 001 FLOW: M/R	SC0047147 MINOR INDUSTRIAL
COVE CREEK TOWN OF SULLIVANS ISLAND WWTP PIPE #: 001 FLOW: 0.57	SC0020052 MINOR DOMESTIC
UNNAMED TRIBUTARY TO KIAWAH RIVER KIAWAH RESORT/CASSIQUE GOLF CO. PIPE #: 001 FLOW: M/R	SC0048186 MINOR DOMESTIC
HUT CREEK TO STONO RIVER THREE OAKS/CHICKEN FARM MINE PIPE #: 001 FLOW: M/R	SCG730083 MINOR INDUSTRIAL
FOLLY CREEK TRIBUTARY ATLANTIC FARMS, INC. PIPE #: 001-005 FLOW: M/R	SCG130001 MINOR INDUSTRIAL

Nonpoint Source Management Program

Land Disposal Activities

Landfill Facilities

LANDFILL NAME *FACILITY TYPE*	*PERMIT #* *STATUS*
TOWN OF SULLIVANS ISLAND MUNICIPAL	------- CLOSED

Land Application Sites

LAND APPLICATION *FACILITY NAME*	*PERMIT #* *YPE*
SPRAY ON GOLF COURSE KIAWAH ISLAND UTILITIES	ND0017361 DOMESTIC

Mining Activities

MINING COMPANY *MINE NAME*	*PERMIT #* *MINERAL*
CHARLESTON COUNTY KINSEY-BLAKE BORROW PIT	0314-19 SAND; SAND/CLAY
W. FRAZIER CONSTRUCTION CO., INC. (DIRTCO) MURRAY WOODS PIT	0512-19 SAND/CLAY
ISLAND CONSTRUCTION CO., INC. TREMONT MINE	0660-19 SAND
THREE OAKS CONTRACTORS, INC. CHICKEN FARM MINE	1129-19 SAND
MURRAY SAND CO., INC. DAVIS PIT	1513-19 SAND
WINGATE FARMS WINGATE	1493-19 SAND
DENISE M.MOSIMANN BEAM REACH MINE	1218-19 SAND
SUNNYSIDE FARMS, INC. SUNNYSIDE FARMS	1322-19 SAND

Growth Potential

There is a high potential for growth in this watershed, which contains the Town of Kiawah Island, the City of Folly Beach, and portions of the City of Charleston and the Towns of Seabrook Island, Sullivans Island, and Mt. Pleasant. Suburban growth areas include: the Dills Property, Ellis Property II, Stiles Point Plantation, Stonefield, Fort Lamar, Grimbel Shores, and Harborwoods III on James Island; and Kiawah Island, Andell Property, and Hope Plantation on Johns Island. All growth areas in the watershed have water and sewer services available.

Watershed Protection and Restoration

Special Projects

Charleston Harbor Project

For the past five years, the Charleston Harbor Project (CHP) has been conducting hundreds of experiments and studies in an effort to come up with a Special Area Management Plan for the Charleston Harbor. The primary goals are simple: to maintain and enhance the quality of the environment in the Charleston Harbor estuary system, to maintain the wide range of water uses and natural resources of the systems, and to anticipate and address potential problems before adverse impacts occur. The Charleston Harbor project initiated a comprehensive variety of projects designed to inform the public and decision makers on all major issues affecting the Harbor and facilitate the best possible policies for achieving economic and natural resources goals for the region. Considerable scientific research was conducted with over fifty reports published on topics including, ecological dynamics, water quality impacts of urban growth, and recreational uses of the resource.

A publication with recommendations related to these studies was made available in 2000. One particular recommendation of the final report was the development of a Special Area Management Plan focused on the Upper Cooper River region. This project was currently under way in 2004 with the management of old rice fields, a major subject of interest. A website with the final report as well as a searchable database of other information on the project is available at: www.scdhec.gov/eqc/ocrm/HTML/chp.html.

Total Maximum Daily Loads (TMDLs)

Two TMDLs addressing dissolved oxygen were developed by SCDHEC for the ***Charleston Harbor Estuary:*** one covering the Ashley River and the other covering the Charleston Harbor, the Cooper River, and the Wando River. The Harbor/Cooper River/Wando River portion of the system (consisting of the Tail Race Canal, West Branch Cooper River, East Branch Cooper River, Shipyard Creek, Town Creek, Back River, Goose Creek, Wando River and Charleston Harbor) is not considered to be impaired with respect to dissolved oxygen (with the exception of the Wando River monitoring site MD-115); however, available information indicates much of the system does not meet the applicable water quality standard for dissolved oxygen for significant periods of time and is considered water quality limited for the purposes of wasteload allocation (WLA) development. WLAs are an integral part of a TMDL, and although not always developed through the TMDL process, the Department and EPA have chosen to use the TMDL process to develop WLAs for the Charleston Harbor system (see following section).

Results of a water quality model indicate the need for a 70% reduction in discharge of oxygen demanding substances to the overall system. A phased approach to achieving these reductions is proposed with an initial Phase I reduction of 60%. For more detailed information on TMDLs, please visit the SCDHEC's Bureau of Water homepage at http://www.scdhec.gov/water and click on "Watersheds and TMDLs" and then "TMDL Program".

Special Models

Charleston Harbor System TMDLs

The modeling efforts for Charleston Harbor and its tributaries have been completed and phased TMDLs for the Ashley and the Cooper systems have been issued by the Department and approved by EPA Region 4. Interim TMDL limits were included in NPDES permits for a number of dischargers while final TMDL limits were included for some dischargers who were already meeting the final limits. Permits included compliance schedules that allowed the opportunity for additional modeling work to be completed before compliance with final limits is required. A group of dischargers working through the local Councils of Government has initiated another modeling effort that is currently underway. If this effort is successfully completed within the allotted time, the existing TMDLs will be revised and, as appropriate, new limits incorporated into NPDES permits for discharges covered by the TMDL.

Supplemental Literature

Bauer, K.M., W.M. Glauz and J.D. Flora. 1984. Methodologies for Determining Trends in Water Quality Data. Draft Copy of Appendix III in USEPA Guidance for Determining Trends in Water Quality Data.

Hirsch, R.M., J.R. Slack and R.A. Smith. 1982. Techniques of trend analysis for monthly water quality data. Water Resources Research 18:107-121.

North Carolina Department of Environmental Health and Natural Resources. 1995. Standard Operating Procedures: Biological Monitoring. Division of Environmental Management, Water Quality Section, Raleigh, NC.

Plafkin, James L., M.T. Barbour, K. D. Porter, S.K. Gross, and R.M. Hughes. 1989. Rapid Bioassessment Protocols for Use in Streams and Rivers: Benthic Macroinvertebrates and Fish. EPA/444/4-89-001, Washington, D.C.

Smith, R.A., R.M. Hirsch and J.R. Slack. 1982. A study of trends in total phosphorus measurements as NASQAN stations. U.S. Geological Survey Water Supply Paper 2190, Reston, VA.

Smith, R.A., R.B. Alexander, and M.G. Wolman. 1987. Water quality trends in the nation's rivers. Science 235:1607-1615.

South Carolina Department of Health and Environmental Control. 1991. Watershed Water Quality Management Strategy in South Carolina: Program description. Bureau of Water, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 1991. South Carolina Lake Classification Survey 1991. Technical Report No. 006-91. Bureau of Water Pollution Control, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 1995. Summary of Heavy Metals Concentrations in South Carolina Waters and Sediments January 1, 1989 - December 31, 1993. Technical Report 006-94. Bureau of Water Pollution Control, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 1995. State Nonpoint Source Pollution Management Program. Bureau of Water Pollution Control, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 1996. Watershed Water Quality Management Strategy - Catawba-Santee Basin. Technical Report 002-96. Bureau of Water, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 1997. Watershed Water Quality Management Strategy - Pee Dee Basin. Technical Report 001-97. Bureau of Water, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 1997. Watershed Water Quality Assessment - Savannah and Salkehatchie Basins. Technical Report 003-97. Bureau of Water, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 1997. 208 Water Quality Management Plan - Plan Update for the Non-designated Area of South Carolina. Bureau of Water, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 1997. Procedures and Quality Control Manual for Chemistry Laboratories. Bureau of Environmental Services, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 1998. Watershed Water Quality Management Strategy - Broad River Basin. Technical Report 001-98. Bureau of Water, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 1998. Watershed Water Quality Assessment - Saluda River Basin. Technical Report 005-98. Bureau of Water, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 1998. Watershed Water Quality Assessment - Edisto River Basin. Technical Report 006-98. Bureau of Water, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 1999. Watershed Water Quality Assessment -Catawba River Basin. Technical Report 011-99. Bureau of Water, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 1999. Watershed Water Quality Assessment -Santee River Basin. Technical Report 012-99. Bureau of Water, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 2000. Watershed Water Quality Assessment –Pee Dee River Basin. Technical Report 015-00. Bureau of Water, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 2000. South Carolina Sanitary Sewer Overflow Compliance and Enforcement Document. Bureau of Water, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 2001. State of South Carolina Monitoring Strategy for Fiscal Year 2001. Technical Report 017-00. Bureau of Water, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 2001. Watershed Water Quality Assessment - Broad River Basin. Technical Report 001-01. Bureau of Water, Columbia, S.C

South Carolina Department of Health and Environmental Control. 2001. Environmental Investigations of Standard Operating and Quality Assurance Manual. Office of Environmental Quality Control, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 2001. South Carolina Ambient Ground Water Quality Monitoring Network. Bureau of Water, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 2002. The State of South Carolina Water Quality Assessment Pursuant to Section 305(b) of the Federal Clean Water Act. Bureau of Water, Columbia, S.C.

South Carolina Department of Health and Environmental Control. 2002. South Carolina Groundwater Contamination Inventory. Bureau of Water, Columbia, S.C

South Carolina Department of Health and Environmental Control. 2003. Watershed Water Quality Assessment Savannah River Basin. Technical Report 002-03. Bureau of Water, Columbia, S.C

South Carolina Department of Health and Environmental Control. 2003. Watershed Water Quality Assessment - Salkehatchie River Basin. Technical Report 003-03. Bureau of Water, Columbia, S.C

South Carolina Department of Health and Environmental Control. 2004 Watershed Water Quality Assessment - Saluda River Basin. Technical Report 004-04. Bureau of Water, Columbia, S.C

South Carolina Department of Health and Environmental Control. 2004 Watershed Water Quality Assessment - Edisto River Basin. Technical Report 005-04. Bureau of Water, Columbia, S.C

South Carolina Department of Health and Environmental Control. 2004. Water Classifications and Standards (Regulation 61-68) and Classified waters (Regulation 61-69) for the State of South Carolina. Bureau of Water, Columbia, S.C.

United States Environmental Protection Agency. 1986. Quality Criteria for Water 1986. Publication No. EPA 440/5-86-001. Office of Water Regulations and Standards, Washington, D.C.

United States Department of Agriculture, Soil Conservation Service. 1963-1990. Soil Surveys for selected Counties of South Carolina, Columbia, S.C.

United States Department of Agriculture and Purdue Agricultural Experiment Station. 1978. Predicting Rainfall Erosion Losses: A Guide to Conservation Planning. USDA, Agriculture Handbook Number 537.

United States Department of Agriculture, Soil Conservation Service. 1982. South Carolina Resources Inventory: A Summary Report From the 1982 National Resources Inventory. SCS, Columbia, S.C.

APPENDIX A.

Santee River Basin

Ambient Water Quality Monitoring Site Descriptions

Station #	Type	Class	Description
03050111-010			
SC-004	SC	FW	Upper Santee River 0.1 mi upstr mouth of Broadwater Creek
ST-527	BIO	FW	Tavern Creek at SR 808
C-014/SC-006	BIO/SC	FW	Warley Creek at SC 267
SC-058	SC	FW	Stream originating upstr of Safety Kleen hazardous landfill
SC-057	SC	FW	Surface drainage from Safety Kleen hazardous landfill
SC-005	SC	FW	Upper Lake Marion near Pack's Landing
ST-034	INT	FW	Lake Marion at RR trestle at Lone Star
RL-01002	RL01	FW	Lake Marion at RR trestle at Lone Star
SC-008	SC	FW	Lake Marion at RR trestle at Lone Star
ST-535/SC009	BIO/SC	FW	Spring Grove Creek at SR 26 bridge
SC-039	SC	FW	Upper Lake Marion 1.25 mi below Rimini rr trestle
SC-044	SC	FW	Upper Lake Marion 0.3 mi NE of Stumphole Landing
SC-010	SC	FW	Upper Lake Marion at channel marker 150
SC-012/RL-02306	SC/RL02	FW	Lake Marion at Jacks Creek embayment
SC-011	SC	FW	Big Poplar Creek at S-38-105 bridge
SC-042	SC	FW	Mid Lake Marion at north end of I-95/US 301 bridges
SC-045	SC	FW	Stream flowing through Santee Natl. Golf Course Pond at Hwy 6
SC-014	SC	FW	Upper Lake Marion at headwaters of Chapel Branch flooded creek
ST-025/SC-015	W/SC	FW	Lake Marion at old US 301/15 bridge at Santee
RL-01016	RL01	FW	Lake Marion 1.6 mi directly SW of I-95 bridge (middle) over lake
RL-01001	RL01	FW	Lake Marion 2.5 mi directly SW of I-95 bridge (middle) over lake
RL-01031	RL01	FW	Lake Marion 3.75 mi directly SW of I-95 bridge (middle) over lake
SC-040	SC	FW	Mid Lake Marion at Channel marker 79
SC-041	SC	FW	Mid Lake Marion 2 mi N of Channel marker 79
SC-016/RL-02308	SC/RL02	FW	Lake Marion at Channel marker 69
RL-02310	RL02	FW	Lake Marion near Santee Nat'l Wildlife Refuge
ST-024	P/I	FW	Lake Marion at end of S-14-64 at Camp Bob Cooper
SC-035/RL-01011	SC/RL01	FW	Lk Marion, 1.1mi SSE of Santee Natl Wildlife Ref & 1mi S of Eagle Pt
SC-021	SC	FW	Lower Lake Marion, 0.9 mi NE of Rocks Pond Campground
CL-042/SC-022	INT/SC	FW	Lake Marion forebay, spillway marker 44
RL-01021	RL01	FW	Lake Marion, 3 mi WSW of Eadytown in SE corner of the lake
CSTL-079/SC-025	P/W/SC	FW	Diversion Canal at SC 45 12.6 mi W of St. Stephens
03050111-020			
C-058	S/W	FW	Lake Inspiration - St Matthews (front of Health Dept.)
C-063	S/W	FW	Halfway Swamp Creek at S-09-43, 3 mi E of St Matthews
ST-533	BIO	FW	Lyons Creek at SC 6
ST-534	BIO	FW	Halfway Swamp Creek at SR157
C-015/SC-007	INT/SC	FW	Halfway Swamp Creek at SC 33
CW-241	W	FW	Halfway Swamp Creek at S-09-72
CW-242	W/I	FW	Halfway Swamp Creek tributary at S-09-158
SC-038	SC	FW	Upper Lake Marion at mouth of Halfway Swamp Creek
03050111-030			
CW-243/SC-047	W/INT/SC	FW	Big Branch at S-14-41
CW-244/SC-013	W/INT/SC	FW	Jacks Creek at S-14-76e

Station #	Type	Class	Description
03050111-040			
ST-018/SC-018	S/INT/SC	FW	Tawcaw Creek at S-14-127 3.2 mi S of Summerton
SC-017	SC	FW	Mid Lake Marion at Tawcaw Creek embayment
SC-036	SC	FW	Mid Lake Marion at mouth of Tawcaw Creek
03050111-050			
ST-035/SC-020	INT/SC	FW	Potato Creek at S-14-127, 3.2 mi S of Summerton
SC-019	SC	FW	Lower Lake Marion at Potato Creek flooded embayment
SC-023	SC	FW	Lower Lake Marion at Wyboo Creek flooded embayment
RS-01051	RS01	FW	White Oak Creek at county rd 345, 4.5 mi ESE of Summerton
ST-036/SC-023A	INT/SC	FW	Lake Marion, Wyboo Creek arm downstream of Clubhouse Branch
03050112-010			
SC-024	SC	FW	Santee River at Wilsons Landing below spillway dam
ST-537	BIO	FW	Doctor Branch at SR 48
ST-536	BIO	FW	Bennetts Branch at SR 351
ST-016	P/INT	FW	Santee River at US 52, 6.5 mi NNW of St. Stephens
03050112-020			
SC-037	SC	FW	Rediversion Canal at SC 45 bridge
ST-031/SC-037A	P/INT/SC	FW	Rediversion Canal at US 52
03050112-030			
ST-001	P/INT	FW	Santee River at SC 41/US 17A NE of Jamestown
RS-02467	RS02	FW	Echaw Creek at Pitch Landing, Francis Marion National Forest
03050112-040			
No monitoring stations in this watershed			
03050112-050			
CSTL-112	W/INT	FW	Wambaw Creek at extention of S-10-857
03050112-060			
ST-005	S/W	FW/SA	North Santee River at US 17
RT-01654	RT01	SA	Minim Creek, 9 mi S of Georgetown
RO-01122	RO01	ORW	Big Duck Creek, 9 mi S of Georgetown
MD-263	INT	ORW	Santee Bay at Beach Creek
RS-01056	RS01	FW	Cedar Creek at county rd 857, Hampton Plantation State Park
ST-006	P/INT	FW/SA	South Santee River at US 17
RO-02004	RT02	ORW	South Santee River, 1.1 mi NW of Atlantic Ocean

For further details concerning sampling frequency and parameters sampled, please visit our website at www.scdhec.gov/eqc/admin/html/eqcpubs.html#wqreports for the current State of S.C. Monitoring Strategy.

Water Quality Data

Spreadsheet Legend

Station Information:

STATION NUMBER Station ID

TYPE SCDHEC station type code

- **P** = Primary station, sampled monthly all year round
- **S** = Secondary station, sampled monthly May - October
- **P*** = Secondary station upgraded to primary station parameter coverage and sampling frequency for basin study
- **W** = Special watershed station added for the Santee River Basin study
- **BIO** = Indicates macroinvertebrate community data assessed
- **INT** = Integrator Station (approximates a Primary station)
- **RL** = Random Lake station
- **RO** = Random Open water station
- **RS** = Random Stream station
- **RT** = Random Tide Creek station

WATERBODY NAME Stream or Lake Name

CLASS Stream classification at the point where monitoring station is located

Parameter Abbreviations and Parameter Measurement Units:

DO	Dissolved Oxygen (mg/l)	**NH3**	Ammonia (mg/l)
BOD	Five-Day Biochemical Oxygen Demand (mg/l)	**CD**	Cadmium (ug/l)
pH	pH (SU)	**CR**	Chromium (ug/l)
TP	Total Phosphorus (mg/l)	**CU**	Copper (ug/l)
TN	Total Nitrogen (mg/l)	**PB**	Lead (ug/l)
TURB	Turbidity (NTU)	**HG**	Mercury (ug/l)
TSS	Total Suspended Solids (mg/l)	**NI**	Nickel (ug/l)
BACT	Fecal Coliform Bacteria (#/100 ml)	**ZN**	Zinc (ug/l)

Statistical Abbreviations:

N For *standards compliance*, number of surface samples collected between January 1998 and December 2002.
For *trends*, number of surface samples collected between January 1984 and December 2002.
For *total phosphorus*, an additional trend period of January 1992 to December 2002 is also reported.

EXC. Number of samples contravening the appropriate standard

% Percentage of samples contravening the appropriate standard

MEAN EXC. Mean of samples that contravened the applied standard

MED For *heavy metals with a human health criterion*, this is the median of all surface samples between January 1997 and December 2001. DL indicates that the median was the detection limit.

MAG Magnitude of any statistically significant trend, average change per year, expressed in parameter measurement units

GEO MEAN Geometric mean of fecal coliform bacteria samples collected between January 1998 and December 2002

Key to Trends:

D Statistically significant decreasing trend in parameter concentration

I Statistically significant increasing trend in parameter concentration

***** No statistically significant trend

03050111-040

ST-018/SC-018	S/INT/SC	FW	TAWCAW CREEK AT S-14-127 3.2 MI S OF SUMMERTON
SC-017	SC	FW	MID LAKE MARION AT TAWCAW CREEK EMBAYMENT
SC-036	SC	FW	MID LAKE MARION AT MOUTH OF TAWCAW CREEK

03050111-050

ST-035/SC-020	INT/SC	FW	POTATO CREEK AT S-14-127, 3.2 MI S OF SUMMERTON
SC-019	SC	FW	LOWER LAKE MARION AT POTATO CREEK FLOODED EMBAYMENT
SC-023	SC	FW	LOWER LAKE MARION AT WYBOO CREEK FLOODED EMBAYMENT
RS-01051	RS01	FW	WHITE OAK CREEK AT COUNTY RD 345, 4.5 MI ESE OF SUMMERTON
ST-036/SC-023A	INT/SC	FW	LAKE MARION, WYBOO CREEK ARM DOWNSTREAM OF CLUBHOUSE BRANCH

03050112-010

SC-024	SC	FW	SANTEE RIVER AT WILSONS LANDING BELOW SPILLWAY DAM
ST-537	BIO	FW	DOCTOR BRANCH AT SR 48
ST-536	BIO	FW	BENNETTS BRANCH AT SR 351
ST-016	P/INT	FW	SANTEE RIVER AT US 52, 6.5 MI NNW OF ST. STEPHENS

03050112-020

SC-037	SC	FW	REDIVERSION CANAL AT SC 45 BRIDGE
ST-031/SC-037A	P/INT/SC	FW	REDIVERSION CANAL AT US 52

03050112-030

ST-001	P/INT	FW	SANTEE RIVER AT SC 41/US 17A NE OF JAMESTOWN
RS-02467	RS02	FW	ECHAW CREEK AT PITCH LANDING, FRANCIS MARION NATIONAL FOREST

03050112-040

NO MONITORING STATIONS IN THIS WATERSHED

03050112-050

CSTL-112	W/INT	FW	WAMBAW CREEK AT EXTENTION OF S-10-857

03050112-060

ST-005	S/W	FW/SA	NORTH SANTEE RIVER AT US 17
RT-01654	RT01	SA	MINIM CREEK, 9 MI S OF GEORGETOWN
RO-01122	RO01	ORW	BIG DUCK CREEK, 9 MI S OF GEORGETOWN
MD-263	INT	ORW	SANTEE BAY AT BEACH CREEK
RS-01056	RS01	FW	CEDAR CREEK AT COUNTY RD 857, HAMPTON PLANTATION STATE PARK
ST-006	P/INT	FW/SA	SOUTH SANTEE RIVER AT US 17
RO-02004	RT02	ORW	SOUTH SANTEE RIVER, 1.1 MI NW OF ATLANTIC OCEAN

For further details concerning sampling frequency and parameters sampled, please visit our website at www.scdhec.gov/eqc/admin/html/eqcpubs.html#wqreports for the current State of S.C. Monitoring Strategy.

Water Quality Data

Spreadsheet Legend

Station Information:

STATION NUMBER Station ID

TYPE SCDHEC station type code

P = Primary station, sampled monthly all year round

S = Secondary station, sampled monthly May - October

P* = Secondary station upgraded to primary station parameter coverage and sampling frequency for basin study

W = Special watershed station added for the Santee River Basin study

BIO = Indicates macroinvertebrate community data assessed

INT = Integrator Station (approximates a Primary station)

RL = Random Lake station

RO = Random Open water station

RS = Random Stream station

RT = Random Tide Creek station

WATERBODY NAME Stream or Lake Name

CLASS Stream classification at the point where monitoring station is located

Parameter Abbreviations and Parameter Measurement Units:

DO	Dissolved Oxygen (mg/l)	**NH3**	Ammonia (mg/l)
BOD	Five-Day Biochemical Oxygen Demand (mg/l)	**CD**	Cadmium (ug/l)
pH	pH (SU)	**CR**	Chromium (ug/l)
TP	Total Phosphorus (mg/l)	**CU**	Copper (ug/l)
TN	Total Nitrogen (mg/l)	**PB**	Lead (ug/l)
TURB	Turbidity (NTU)	**HG**	Mercury (ug/l)
TSS	Total Suspended Solids (mg/l)	**NI**	Nickel (ug/l)
BACT	Fecal Coliform Bacteria (#/100 ml)	**ZN**	Zinc (ug/l)

Statistical Abbreviations:

N For *standards compliance*, number of surface samples collected between January 1998 and December 2002.
For *trends*, number of surface samples collected between January 1984 and December 2002.
For *total phosphorus*, an additional trend period of January 1992 to December 2002 is also reported.

EXC. Number of samples contravening the appropriate standard

% Percentage of samples contravening the appropriate standard

MEAN EXC. Mean of samples that contravened the applied standard

MED For *heavy metals with a human health criterion*, this is the median of all surface samples between January 1997 and December 2001. DL indicates that the median was the detection limit.

MAG Magnitude of any statistically significant trend, average change per year, expressed in parameter measurement units

GEO MEAN Geometric mean of fecal coliform bacteria samples collected between January 1998 and December 2002

Key to Trends:

D Statistically significant decreasing trend in parameter concentration

I Statistically significant increasing trend in parameter concentration

***** No statistically significant trend

SANTEE RIVER BASIN WATER QUALITY SUMMARY

STATION					DO	DO	DO	MEAN	TRENDS (88 -2002)					
NUMBER	TYPE	WATERBODY NAME	CLASS		N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG
03050111010														
SC-004	SC	SANTEE RVR	FW		46	0	0							
ST-527	BIO	TAVERN CK												
C-014 / SC-006	SC / BIO	WARLEY CK	FW		11	0	0							
SC-058	SC	UNNAMED TRIB	FW		40	2	5	4.450						
SC-056	SC	RUNOFF	FW		46	0	0							
SC-057	SC	RUNOFF	FW		47	0	0							
SC-005	SC	LAKE MARION	FW		50	3	6	4.367						
ST-034 / RL-01002 / SC-008	INT	LAKE MARION	FW		57	1	2	4.89						
ST-535 / SC-009	SC / BIO	SPRING GROVE CK	FW		10	1	10	4.98						
SC-039	SC	LAKE MARION	FW		50	1	2	4.57						
SC-044	SC	LAKE MARION	FW		45	0	0							
SC-010	SC	LAKE MARION	FW		52	0	0							
RL-02306 / SC-012	RL02	LAKE MARION	FW		54	2	4	4.575						
SC-011	SC	BIG POPLAR CR	FW		11	1	9	4.4						
SC-042	SC	LAKE MARION	FW		47	0	0							
SC-045	SC	CHAPEL BRANCH CK	FW		30	0	0							
SC-014	SC	LAKE MARION	FW		58	0	0							
ST-025 / SC-015	CS	LAKE MARION	FW		83	2	2	4.850	D	157	-0.112	D	155	-0.115
RL-01016	RL01	LAKE MARION	FW		5	0	0							
RL-01001	RL01	LAKE MARION	FW		5	0	0							
RL-01031	RL01	LAKE MARION	FW		5	0	0							
SC-040	SC	LAKE MARION	FW		56	0	0							
SC-041	SC	LAKE MARION	FW		50	0	0							
RL-02308 / SC-016	RL02	LAKE MARION	FW		55	0	0							
RL-02310	RL02	LAKE MARION	FW		8	0	0							
ST-024	I*	LAKE MARION	FW		34	0	0		D	153	-0.043	*	151	0
RL-01011 / SC-035	RL01	LAKE MARION	FW		55	0	0							
SC-021	SC	LAKE MARION	FW		55	0	0							
CL-042 / SC-022	INT	LAKE MARION	FW		55	0	0							
RL-01021	RL01	LAKE MARION	FW		8	0	0							
CSTL-079 / SC-025	CS	DIVERSION CANAL	FW		77	1	1	4.5	D	146	-0.05	D	145	-0.089

SANTEE RIVER BASIN WATER QUALITY SUMMARY

STATION					pH	pH	pH	MEAN	TRENDS (88-2002)				TURB	TURB	TURB	MEAN	TRENDS (88-2002)		
NUMBER	TYPE	WATERBODY NAME	CLASS		N	EXC.	%	EXC.	PH	N	MAG		N	EXC.	%	EXC.	TURB	N	MAG
03050111010																			
SC-004	SC	SANTEE RVR	FW		45	0	0						47	2	4	60.400			
ST-527	BIO	TAVERN CK																	
C-014 / SC-006	SC / BIO	WARLEY CK	FW		11	0	0						11	1	9	89.5			
SC-058	SC	UNNAMED TRIB	FW		40	11	28	5.187					41	1	2	78.6			
SC-056	SC	RUNOFF	FW		46	19	41	5.384					47	5	11	73.360			
SC-057	SC	RUNOFF	FW		47	1	2	9.7					48	2	4	106.500			
SC-005	SC	LAKE MARION	FW		51	0	0						52	3	6	26.633			
ST-034 / RL-01002 / SC-008	INT	LAKE MARION	FW		56	0	0						57	8	14	37.850			
ST-535 / SC-009	SC / BIO	SPRING GROVE CK	FW		10	1	10	5.9					10	0	0				
SC-039	SC	LAKE MARION	FW		51	0	0						52	4	8	31.300			
SC-044	SC	LAKE MARION	FW		47	5	11	8.810					49	6	12	32.117			
SC-010	SC	LAKE MARION	FW		51	2	4	8.700					51	3	6	34.900			
RL-02306 / SC-012	RL02	LAKE MARION	FW		53	1	2	8.8					54	0	0				
SC-011	SC	BIG POPLAR CR	FW		11	0	0						11	0	0				
SC-042	SC	LAKE MARION	FW		46	1	2	8.8					47	2	4	39.400			
SC-045	SC	CHAPEL BRANCH CK	FW		32	2	6	8.650					33	0	0				
SC-014	SC	LAKE MARION	FW		57	16	28	8.808					55	1	2	34.5			
ST-025 / SC-015	CS	LAKE MARION	FW		82	4	5	8.645	D	156	-0.029		81	7	9	33.500	*	156	0.083
RL-01016	RL01	LAKE MARION	FW		6	2	33	8.745					9	1	11	35.4			
RL-01001	RL01	LAKE MARION	FW		6	1	17	8.8					9	0	0				
RL-01031	RL01	LAKE MARION	FW		6	1	17	8.9					9	0	0				
SC-040	SC	LAKE MARION	FW		55	4	7	6.895					54	3	6	39.067			
SC-041	SC	LAKE MARION	FW		50	4	8	8.663					49	1	2	39.6			
RL-02308 / SC-016	RL02	LAKE MARION	FW		55	6	11	8.680					55	2	4	42.850			
RL-02310	RL02	LAKE MARION	FW		8	0	0						10	0	0				
ST-024	I*	LAKE MARION	FW		34	0	0		*	151	0		34	2	6	36.500	*	152	-0.056
RL-01011 / SC-035	RL01	LAKE MARION	FW		54	4	7	8.728					55	1	2	42			
SC-021	SC	LAKE MARION	FW		55	4	7	8.755					56	2	4	27.450			
CL-042 / SC-022	INT	LAKE MARION	FW		56	2	4	8.810					56	2	4	29.150			
RL-01021	RL01	LAKE MARION	FW		8	0	0						9	0	0				
CSTL-079 / SC-025	CS	DIVERSION CANAL	FW		77	2	3	8.720	*	145	0.01		79	0	0		I	145	0.2

SANTEE RIVER BASIN WATER QUALITY SUMMARY

STATION				TP	TP	TP	MEAN	TRENDS (92-2002)			TRENDS (88-2002)			TN	TN	TN	MEAN	TRENDS (88-2002)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	TP	N	MAG	TP	N	MAG	N	EXC.	%	EXC.	TN	N	MAG
03050111010																				
SC-004	SC	SANTEE RVR	FW																	
ST-527	BIO	TAVERN CK																		
C-014 / SC-006	SC / BIO	WARLEY CK	FW																	
SC-058	SC	UNNAMED TRIB	FW																	
SC-056	SC	RUNOFF	FW																	
SC-057	SC	RUNOFF	FW																	
SC-005	SC	LAKE MARION	FW	32	8	25	0.125							35	0	0				
ST-034 / RL-01002 / SC-008	INT	LAKE MARION	FW	37	15	41	0.111							47	1	2	2.17			
ST-535 / SC-009	SC / BIO	SPRING GROVE CK	FW																	
SC-039	SC	LAKE MARION	FW	32	6	19	0.118							35	0	0				
SC-044	SC	LAKE MARION	FW	27	5	19	0.096							30	0	0				
SC-010	SC	LAKE MARION	FW	29	10	34	0.102							32	2	6	1.705			
RL-02306 / SC-012	RL02	LAKE MARION	FW	36	1	3	0.12							40	0	0				
SC-011	SC	BIG POPLAR CR	FW																	
SC-042	SC	LAKE MARION	FW	29	5	17	0.082							27	0	0				
SC-045	SC	CHAPEL BRANCH CK	FW																	
SC-014	SC	LAKE MARION	FW	33	15	45	0.092							38	11	29	2.218			
ST-025 / SC-015	CS	LAKE MARION	FW	39	10	26	0.143	*	79	-0.003	*	128	0	73	0	0		*	160	-0.004
RL-01016	RL01	LAKE MARION	FW											6	0	0				
RL-01001	RL01	LAKE MARION	FW											6	0	0				
RL-01031	RL01	LAKE MARION	FW											6	0	0				
SC-040	SC	LAKE MARION	FW	32	5	16	0.092							37	1	3	2.26			
SC-041	SC	LAKE MARION	FW	28	4	14	0.093							31	1	3	1.96			
RL-02308 / SC-016	RL02	LAKE MARION	FW	36	5	14	0.118							41	0	0				
RL-02310	RL02	LAKE MARION	FW	8	1	13	0.07							8	0	0				
ST-024	I*	LAKE MARION	FW	6	1	17	0.08	*	73	0	*	120	0	31	0	0		D	145	-0.011
RL-01011 / SC-035	RL01	LAKE MARION	FW	33	2	6	1.537							41	0	0				
SC-021	SC	LAKE MARION	FW	33	4	12	3.041							37	0	0				
CL-042 / SC-022	INT	LAKE MARION	FW	37	2	5	0.093							46	0	0				
RL-01021	RL01	LAKE MARION	FW											6	0	0				
CSTL-079 / SC-025	CS	DIVERSION CANAL	FW					*	64	0	D	108	0					*	149	-0.004

SANTEE RIVER BASIN WATER QUALITY SUMMARY

STATION				CHL	CHL	CHL	MEAN	TRENDS (88-2002)			GEO	BACT	BACT	BACT	MEAN	TRENDS (88-2002)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	TSS	N	MAG	MEAN	N	EXC.	%	EXC.	BACT	N	MAG
03050111010																		
SC-004	SC	SANTEE RVR	FW								22.2	43	1	2	470.0			
ST-527	BIO	TAVERN CK																
C-014 / SC-006	SC / BIO	WARLEY CK	FW								478.2	10	6	60	963.3			
SC-058	SC	UNNAMED TRIB	FW								1.0	3	0	0				
SC-056	SC	RUNOFF	FW								1.0	3	0	0				
SC-057	SC	RUNOFF	FW								1.0	3	0	0				
SC-005	SC	LAKE MARION	FW	46	2	4	63.10				3.0	49	0	0				
ST-034 / RL-01002 / SC-008	INT	LAKE MARION	FW								15.6	55	1	2	550.0			
ST-535 / SC-009	SC / BIO	SPRING GROVE CK	FW								291.2	9	4	44	892.5			
SC-039	SC	LAKE MARION	FW	43	0	0					2.3	51	0	0				
SC-044	SC	LAKE MARION	FW	40	2	5	88.70				3.8	47	0	0				
SC-010	SC	LAKE MARION	FW	44	2	5	47.50				4.4	48	0	0				
RL-02306 / SC-012	RL02	LAKE MARION	FW	48	7	15	48.84				3.0	54	0	0				
SC-011	SC	BIG POPLAR CR	FW								56.5	10	3	30	543.3			
SC-042	SC	LAKE MARION	FW	39	1	3	65.8				1.8	44	0	0				
SC-045	SC	CHAPEL BRANCH CK	FW								8.3	31	1	3	560.0			
SC-014	SC	LAKE MARION	FW	50	17	34	72.43				20.8	56	1	2	552.0			
ST-025 / SC-015	CS	LAKE MARION	FW	41	3	7	53.20				4.3	81	1	1	600	*	154	0
RL-01016	RL01	LAKE MARION	FW	5	0	0					1.0	6	0	0				
RL-01001	RL01	LAKE MARION	FW	6	0	0					1.0	6	0	0				
RL-01031	RL01	LAKE MARION	FW	6	0	0					2.0	6	0	0				
SC-040	SC	LAKE MARION	FW	45	2	4	59.25				2.0	55	0	0				
SC-041	SC	LAKE MARION	FW	46	1	2	54.2				1.5	49	0	0				
RL-02308 / SC-016	RL02	LAKE MARION	FW	48	0	0					1.2	55	0	0				
RL-02310	RL02	LAKE MARION	FW	6	0	0					1.5	10	0	0				
ST-024	I*	LAKE MARION	FW								2.3	34	0	0		D	153	-0.182
RL-01011 / SC-035	RL01	LAKE MARION	FW	46	0	0					1.2	54	0	0				
SC-021	SC	LAKE MARION	FW	48	1	2	108				1.5	53	0	0				
CL-042 / SC-022	INT	LAKE MARION	FW	50	0	0					1.3	54	0	0				
RL-01021	RL01	LAKE MARION	FW	4	0	0					2.1	7	0	0				
CSTL-079 / SC-025	CS	DIVERSION CANAL	FW								6.7	74	3	4	645.0	*	140	0

SANTEE RIVER BASIN WATER QUALITY SUMMARY

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	NH3 N	NH3 EXC.	NH3 %	CD N	CD EXC.	CD %	MEAN EXC.	CR N	CR EXC.	CR %	MEAN EXC.	CU N	CU EXC.	CU %	MEAN EXC.	PB N	PB EXC.	PB %	MEAN EXC.
03050111010																						
SC-004	SC	SANTEE RVR	FW				42	0	0		42	0	0		42	0	0		42	0	0	
ST-527	BIO	TAVERN CK																				
C-014 / SC-006	SC / BIO	WARLEY CK	FW				8	0	0		8	0	0		8	1	13	36.8	8	0	0	
SC-058	SC	UNNAMED TRIB	FW				37	0	0		37	0	0		37	1	3	7.63	36	0	0	
SC-056	SC	RUNOFF	FW				43	0	0		43	0	0		43	0	0		43	0	0	
SC-057	SC	RUNOFF	FW				44	0	0		44	0	0		44	0	0		43	0	0	
SC-005	SC	LAKE MARION	FW				43	0	0		43	0	0		43	0	0		42	0	0	
ST-034 / RL-01002 / SC-008	INT	LAKE MARION	FW	15	0	0	50	0	0		50	0	0		50	0	0		50	0	0	
ST-535 / SC-009	SC / BIO	SPRING GROVE CK	FW				7	0	0		7	0	0		7	0	0		7	0	0	
SC-039	SC	LAKE MARION	FW				43	0	0		43	0	0		43	0	0		43	0	0	
SC-044	SC	LAKE MARION	FW				40	0	0		40	0	0		40	0	0		40	0	0	
SC-010	SC	LAKE MARION	FW				41	0	0		41	0	0		41	0	0		41	0	0	
RL-02306 / SC-012	RL02	LAKE MARION	FW	6	0	0	47	0	0		47	0	0		47	1	2	9.36	46	0	0	
SC-011	SC	BIG POPLAR CR	FW				8	0	0		8	0	0		8	0	0		8	0	0	
SC-042	SC	LAKE MARION	FW				44	0	0		44	0	0		44	0	0		44	0	0	
SC-045	SC	CHAPEL BRANCH CK	FW				29	0	0		29	0	0		29	0	0		29	0	0	
SC-014	SC	LAKE MARION	FW				44	0	0		44	0	0		44	0	0		43	0	0	
ST-025 / SC-015	CS	LAKE MARION	FW	51	0	0	63	0	0		63	0	0		63	0	0		63	0	0	
RL-01016	RL01	LAKE MARION	FW	8	0	0	12	0	0		12	0	0		12	0	0		12	0	0	
RL-01001	RL01	LAKE MARION	FW	8	0	0	12	0	0		12	0	0		12	0	0		11	0	0	
RL-01031	RL01	LAKE MARION	FW	8	0	0	11	0	0		11	0	0		11	0	0		11	0	0	
SC-040	SC	LAKE MARION	FW				43	0	0		43	0	0		43	0	0		42	0	0	
SC-041	SC	LAKE MARION	FW				40	0	0		40	0	0		40	1	3	5.5	40	0	0	
RL-02308 / SC-016	RL02	LAKE MARION	FW	8	0	0	47	0	0		47	0	0		47	0	0		46	0	0	
RL-02310	RL02	LAKE MARION	FW	8	0	0	14	0	0		14	0	0		14	0	0		14	0	0	
ST-024	I*	LAKE MARION	FW	34	0	0	10	0	0		10	1	10	70	10	0	0		10	0	0	
RL-01011 / SC-035	RL01	LAKE MARION	FW	8	0	0	48	0	0		48	0	0		48	1	2	5.21	47	0	0	
SC-021	SC	LAKE MARION	FW				43	0	0		43	0	0		43	0	0		43	0	0	
CL-042 / SC-022	INT	LAKE MARION	FW	16	0	0	52	0	0		52	0	0		52	1	2	11	51	0	0	
RL-01021	RL01	LAKE MARION	FW	7	0	0	12	0	0		12	0	0		12	0	0		12	0	0	
CSTL-079 / SC-025	CS	DIVERSION CANAL	FW	49	0	0	62	0	0		62	0	0		62	0	0		62	0	0	

SANTEE RIVER BASIN WATER QUALITY SUMMARY

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	HG N	HG EXC.	HG %	NI N	NI EXC.	NI %	MEAN EXC.	ZN N	ZN EXC.	ZN %	MEAN EXC.
03050111010														
SC-004	SC	SANTEE RVR	FW				31	0	0		42	0	0	
ST-527	BIO	TAVERN CK												
C-014 / SC-006	SC / BIO	WARLEY CK	FW				6	0	0		8	0	0	
SC-058	SC	UNNAMED TRIB	FW	21	0	0	29	0	0		37	0	0	
SC-056	SC	RUNOFF	FW	21	0	0	32	0	0		43	0	0	
SC-057	SC	RUNOFF	FW	21	0	0	32	0	0		44	0	0	
SC-005	SC	LAKE MARION	FW				32	0	0		43	0	0	
ST-034 / RL-01002 / SC-008	INT	LAKE MARION	FW	7	0	0	38	0	0		50	0	0	
ST-535 / SC-009	SC / BIO	SPRING GROVE CK	FW				5	0	0		7	0	0	
SC-039	SC	LAKE MARION	FW				32	0	0		43	0	0	
SC-044	SC	LAKE MARION	FW				29	0	0		40	0	0	
SC-010	SC	LAKE MARION	FW				31	0	0		41	0	0	
RL-02306 / SC-012	RL02	LAKE MARION	FW	3	0	0	35	0	0		47	0	0	
SC-011	SC	BIG POPLAR CR	FW				6	0	0		8	0	0	
SC-042	SC	LAKE MARION	FW				32	0	0		44	0	0	
SC-045	SC	CHAPEL BRANCH CK	FW				24	0	0		29	0	0	
SC-014	SC	LAKE MARION	FW				32	0	0		44	0	0	
ST-025 / SC-015	CS	LAKE MARION	FW	19	0	0	51	0	0		63	0	0	
RL-01016	RL01	LAKE MARION	FW	4	0	0	12	0	0		12	0	0	
RL-01001	RL01	LAKE MARION	FW	4	0	0	12	0	0		12	0	0	
RL-01031	RL01	LAKE MARION	FW	4	0	0	11	0	0		11	0	0	
SC-040	SC	LAKE MARION	FW				31	0	0		43	0	0	
SC-041	SC	LAKE MARION	FW				28	0	0		40	0	0	
RL-02308 / SC-016	RL02	LAKE MARION	FW	4	0	0	35	0	0		47	0	0	
RL-02310	RL02	LAKE MARION	FW	4	0	0	4	0	0		14	0	0	
ST-024	I*	LAKE MARION	FW	10	0	0	10	0	0		10	0	0	
RL-01011 / SC-035	RL01	LAKE MARION	FW	4	0	0	36	0	0		48	0	0	
SC-021	SC	LAKE MARION	FW				31	0	0		43	0	0	
CL-042 / SC-022	INT	LAKE MARION	FW	8	0	0	40	0	0		52	1	2	150
RL-01021	RL01	LAKE MARION	FW	4	0	0	12	0	0		12	0	0	
CSTL-079 / SC-025	CS	DIVERSION CANAL	FW	20	0	0	50	0	0		62	0	0	

SANTEE RIVER BASIN WATER QUALITY SUMMARY

STATION					DO	DO	DO	MEAN	TRENDS (88 -2002)					
NUMBER	TYPE	WATERBODY NAME	CLASS		N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG
03050111020														
C-058	CS	LAKE INSPIRATION	FW		29	4	14	3.420	*	76	0	D	66	-0.164
C-063	CS	HALFWAY SWAMP CK	FW		30	0	0		*	83	0	D	77	-0.091
ST-533	BIO	LYONS CK												
ST-534	BIO	HALFWAY SWAMP CK												
C-015 / SC-007	INT	HALFWAY SWAMP CK	FW		31	1	3	4.4						
CW-241	CS	HALFWAY SWAMP CK	FW		20	0	0		*	31	0.05			
CW-242	I*	UNNAMED TRIB	FW		6	1	17	4.1						
SC-038	SC	LAKE MARION	FW		46	0	0							
03050111030														
CW-243 / SC-047	INT	BIG BRANCH	FW		22	10	45	1.965	*	34	-0.178	*	34	-0.091
CW-244 / SC-013	INT	JACKS CK	FW		35	4	11	4.803	*	41	-0.08	D	40	-0.163
03050111040														
ST-018 / SC-018	INT	TAWCAW CK	FW		42	19	45	2.146	D	98	-0.169	I	100	0.1
SC-017	SC	LAKE MARION	FW		56	0	0							
SC-036	SC	LAKE MARION	FW		56	0	0							
03050111050														
ST-035 / SC-020	INT	POTATO CK	FW		26	14	54	2.481						
SC-019	SC	LAKE MARION	FW		55	0	0							
SC-023	SC	LAKE MARION	FW		31	0	0							
RS-01051	RS01	WHITE OAK CK	FW		11	1	9	2.8						
ST-036 / SC-023A	INT	LAKE MARION	FW		24	1	4	4.9						
03050112010														
SC-024	SC	SANTEE RVR	FW		56	0	0							
ST-537	BIO	DOCTOR BRANCH												
ST-536	BIO	BENNETTS BRANCH												
ST-016	INT	SANTEE RVR	FW		51	2	4	4.590	*	166	0	D	164	-0.1
03050112020														
SC-037	SC	REDIVERSION CANAL	FW		23	0	0							
ST-031 / SC-037A	INT	REDIVERSION CANAL	FW		54	0	0		*	129	-0.031	D	127	-0.15

SANTEE RIVER BASIN WATER QUALITY SUMMARY

STATION				pH	pH	pH	MEAN	TRENDS (88-2002)			TURB	TURB	TURB	MEAN	TRENDS (88-2002)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	PH	N	MAG	N	EXC.	%	EXC.	TURB	N	MAG
03050111020																	
C-058	CS	LAKE INSPIRATION	FW	29	6	21	7.767	*	75	-0.002	29	24	83	87.208	I	70	2.513
C-063	CS	HALFWAY SWAMP CK	FW	30	2	7	5.600	*	83	0.01	30	0	0		*	80	0
ST-533	BIO	LYONS CK															
ST-534	BIO	HALFWAY SWAMP CK															
C-015 / SC-007	INT	HALFWAY SWAMP CK	FW	30	0	0					30	0	0				
CW-241	CS	HALFWAY SWAMP CK	FW	20	0	0		I	31	0.06	18	0	0				
CW-242	I*	UNNAMED TRIB	FW	6	0	0					5	0	0				
SC-038	SC	LAKE MARION	FW	47	0	0					48	8	17	33.675			
03050111030																	
CW-243 / SC-047	INT	BIG BRANCH	FW	22	8	36	5.424	*	34	-0.014	23	1	4	100	D	35	-1.408
CW-244 / SC-013	INT	JACKS CK	FW	35	2	6	5.065	*	41	0.013	36	0	0		D	42	-0.479
03050111040																	
ST-018 / SC-018	INT	TAWCAW CK	FW	43	2	5	5.435	I	98	0.025	45	1	2	55	*	100	0.149
SC-017	SC	LAKE MARION	FW	54	3	6	7.540				54	0	0				
SC-036	SC	LAKE MARION	FW	53	0	0					54	4	7	30.250			
03050111050																	
ST-035 / SC-020	INT	POTATO CK	FW	26	3	12	6.620				28	0	0				
SC-019	SC	LAKE MARION	FW	53	0	0					54	1	2	26.6			
SC-023	SC	LAKE MARION	FW	30	1	3	8.7				31	0	0				
RS-01051	RS01	WHITE OAK CK	FW	11	0	0					11	0	0				
ST-036 / SC-023A	INT	LAKE MARION	FW	23	0	0					23	0	0				
03050112010																	
SC-024	SC	SANTEE RVR	FW	55	1	2	5.6				57	1	2	64.5			
ST-537	BIO	DOCTOR BRANCH															
ST-536	BIO	BENNETTS BRANCH															
ST-016	INT	SANTEE RVR	FW	51	0	0		I	165	0.047	51	0	0		I	165	0.148
03050112020																	
SC-037	SC	REDIVERSION CANAL	FW	23	0	0					23	0	0				
ST-031 / SC-037A	INT	REDIVERSION CANAL	FW	53	1	2	8.97	I	127	0.064	52	1	2	63	*	127	0.033

SANTEE RIVER BASIN WATER QUALITY SUMMARY

STATION				TP	TP	TP	MEAN	TRENDS (92-2002)			TRENDS (88-2002)			TN	TN	TN	MEAN	TRENDS (88-2002)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	TP	N	MAG	TP	N	MAG	N	EXC.	%	EXC.	TN	N	MAG
03050111020																				
C-058	CS	LAKE INSPIRATION	FW	14	13	93	0.328	I	40	0.025	*	55	0.002	8	3	38	2.290			
C-063	CS	HALFWAY SWAMP CK	FW								*	49	0.002							
ST-533	BIO	LYONS CK																		
ST-534	BIO	HALFWAY SWAMP CK																		
C-015 / SC-007	INT	HALFWAY SWAMP CK	FW																	
CW-241	CS	HALFWAY SWAMP CK	FW																	
CW-242	I*	UNNAMED TRIB	FW																	
SC-038	SC	LAKE MARION	FW	28	10	36	0.126							30	0	0				
03050111030																				
CW-243 / SC-047	INT	BIG BRANCH	FW																	
CW-244 / SC-013	INT	JACKS CK	FW															*	30	0.004
03050111040																				
ST-018 / SC-018	INT	TAWCAW CK	FW					*	35	0.005	*	58	0					*	36	-0.001
SC-017	SC	LAKE MARION	FW	33	2	6	0.108							37	0	0				
SC-036	SC	LAKE MARION	FW	33	2	6	0.075							37	0	0				
03050111050																				
ST-035 / SC-020	INT	POTATO CK	FW																	
SC-019	SC	LAKE MARION	FW	33	3	9	0.130							37	1	3	1.71			
SC-023	SC	LAKE MARION	FW	28	0	0								32	0	0				
RS-01051	RS01	WHITE OAK CK	FW																	
ST-036 / SC-023A	INT	LAKE MARION	FW	9	1	11	0.09							14	0	0				
03050112010																				
SC-024	SC	SANTEE RVR	FW																	
ST-537	BIO	DOCTOR BRANCH																		
ST-536	BIO	BENNETTS BRANCH																		
ST-016	INT	SANTEE RVR	FW					*	68	0	*	112	-0.001					D	153	-0.011
03050112020																				
SC-037	SC	REDIVERSION CANAL	FW																	
ST-031 / SC-037A	INT	REDIVERSION CANAL	FW					*	63	0	*	70	0					D	115	-0.011

SANTEE RIVER BASIN WATER QUALITY SUMMARY

STATION				CHL	CHL	CHL	MEAN	TRENDS (88-2002)			GEO	BACT	BACT	BACT	MEAN	TRENDS (88-2002)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	TSS	N	MAG	MEAN	N	EXC.	%	EXC.	BACT	N	MAG
03050111020																		
C-058	CS	LAKE INSPIRATION	FW	1	1	100	156				28.5	29	3	10	826.7	*	71	-1.141
C-063	CS	HALFWAY SWAMP CK	FW								631.7	33	24	73	1250.4	I	83	26.408
ST-533	BIO	LYONS CK																
ST-534	BIO	HALFWAY SWAMP CK																
C-015 / SC-007	INT	HALFWAY SWAMP CK	FW								331.0	32	13	41	1563.8			
CW-241	CS	HALFWAY SWAMP CK	FW								286.3	22	6	27	1148.3	*	33	5.224
CW-242	I*	UNNAMED TRIB	FW								100.7	6	1	17	1800.0			
SC-038	SC	LAKE MARION	FW	42	5	12	56.64				14.9	46	1	2	488.0			
03050111030																		
CW-243 / SC-047	INT	BIG BRANCH	FW								253.4	24	8	33	1510.0	*	35	-3.119
CW-244 / SC-013	INT	JACKS CK	FW								133.3	36	3	8	940.0	*	43	-2.801
03050111040																		
ST-018 / SC-018	INT	TAWCAW CK	FW								251.4	44	19	43	1320.0	*	101	-9.965
SC-017	SC	LAKE MARION	FW	46	1	2	40.8				3.0	53	0	0				
SC-036	SC	LAKE MARION	FW	45	0	0					1.5	52	0	0				
03050111050																		
ST-035 / SC-020	INT	POTATO CK	FW								231.0	27	6	22	728.3			
SC-019	SC	LAKE MARION	FW	46	0	0					1.9	54	0	0				
SC-023	SC	LAKE MARION	FW	26	0	0					2.5	30	0	0				
RS-01051	RS01	WHITE OAK CK	FW								267.0	10	2	20	485.0			
ST-036 / SC-023A	INT	LAKE MARION	FW	21	0	0					1.6	24	0	0				
03050112010																		
SC-024	SC	SANTEE RVR	FW								13.5	52	4	8	812.5			
ST-537	BIO	DOCTOR BRANCH																
ST-536	BIO	BENNETTS BRANCH																
ST-016	INT	SANTEE RVR	FW								28.3	50	4	8	720.0	D	160	-1.16
03050112020																		
SC-037	SC	REDIVERSION CANAL	FW								5.7	20	1	5	600.0			
ST-031 / SC-037A	INT	REDIVERSION CANAL	FW								2.7	53	1	2	410.0	D	128	-0.144

SANTEE RIVER BASIN WATER QUALITY SUMMARY

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	NH3 N	NH3 EXC.	NH3 %	CD N	CD EXC.	CD %	MEAN EXC.	CR N	CR EXC.	CR %	MEAN EXC.	CU N	CU EXC.	CU %	MEAN EXC.	PB N	PB EXC.	PB %	MEAN EXC.
03050111020																						
C-058	CS	LAKE INSPIRATION	FW	8	0	0	4	0	0		4	0	0		4	0	0		4	0	0	
C-063	CS	HALFWAY SWAMP CK	FW	16	0	0	8	0	0		8	0	0		8	0	0		8	0	0	
ST-533	BIO	LYONS CK																				
ST-534	BIO	HALFWAY SWAMP CK																				
C-015 / SC-007	INT	HALFWAY SWAMP CK	FW	15	0	0	33	0	0		33	1	3	130	33	0	0		33	0	0	
CW-241	CS	HALFWAY SWAMP CK	FW	13	0	0	5	0	0		5	0	0		5	0	0		5	0	0	
CW-242	I*	UNNAMED TRIB	FW	5	0	0	1	0	0		1	0	0		1	0	0		1	0	0	
SC-038	SC	LAKE MARION	FW				39	0	0		39	0	0		39	0	0		39	0	0	
03050111030																						
CW-243 / SC-047	INT	BIG BRANCH	FW	16	0	0	8	0	0		8	0	0		8	0	0		8	0	0	
CW-244 / SC-013	INT	JACKS CK	FW	20	0	0	14	0	0		14	0	0		14	0	0		14	0	0	
03050111040																						
ST-018 / SC-018	INT	TAWCAW CK	FW	25	0	0	15	0	0		15	0	0		15	0	0		15	0	0	
SC-017	SC	LAKE MARION	FW				44	0	0		44	0	0		44	1	2	5.22	44	0	0	
SC-036	SC	LAKE MARION	FW				44	0	0		44	0	0		44	0	0		44	0	0	
03050111050																						
ST-035 / SC-020	INT	POTATO CK	FW	11	0	0	11	0	0		11	0	0		11	0	0		11	0	0	
SC-019	SC	LAKE MARION	FW				44	0	0		44	0	0		44	0	0		44	0	0	
SC-023	SC	LAKE MARION	FW				23	0	0		23	0	0		23	0	0		23	0	0	
RS-01051	RS01	WHITE OAK CK	FW	6	0	0	4	0	0		4	0	0		4	0	0		4	0	0	
ST-036 / SC-023A	INT	LAKE MARION	FW	16	0	0	29	0	0		29	0	0		29	0	0		29	0	0	
03050112010																						
SC-024	SC	SANTEE RVR	FW				41	0	0		41	0	0		41	0	0		41	0	0	
ST-537	BIO	DOCTOR BRANCH																				
ST-536	BIO	BENNETTS BRANCH																				
ST-016	INT	SANTEE RVR	FW	41	0	0	20	0	0		20	0	0		20	0	0		20	0	0	
03050112020																						
SC-037	SC	REDIVERSION CANAL	FW				21	0	0		21	0	0		21	1	5	53	21	0	0	
ST-031 / SC-037A	INT	REDIVERSION CANAL	FW	45	0	0	20	0	0		20	0	0		20	1	5	40	20	0	0	

SANTEE RIVER BASIN WATER QUALITY SUMMARY

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	HG N	HG EXC.	HG %	NI N	NI EXC.	NI %	MEAN EXC.	ZN N	ZN EXC.	ZN %	MEAN EXC.
03050111020														
C-058	CS	LAKE INSPIRATION	FW	4	0	0	4	0	0		4	0	0	
C-063	CS	HALFWAY SWAMP CK	FW	8	0	0	8	0	0		8	0	0	
ST-533	BIO	LYONS CK												
ST-534	BIO	HALFWAY SWAMP CK												
C-015 / SC-007	INT	HALFWAY SWAMP CK	FW	8	0	0	21	0	0		33	0	0	
CW-241	CS	HALFWAY SWAMP CK	FW	5	0	0	5	0	0		5	1	20	110
CW-242	I*	UNNAMED TRIB	FW	1	0	0	1	0	0		1	0	0	
SC-038	SC	LAKE MARION	FW				29	0	0		39	0	0	
03050111030														
CW-243 / SC-047	INT	BIG BRANCH	FW	8	0	0	8	0	0		8	0	0	
CW-244 / SC-013	INT	JACKS CK	FW	9	0	0	14	0	0		14	0	0	
03050111040														
ST-018 / SC-018	INT	TAWCAW CK	FW	11	0	0	15	0	0		15	0	0	
SC-017	SC	LAKE MARION	FW				32	0	0		44	0	0	
SC-036	SC	LAKE MARION	FW				32	0	0		44	0	0	
03050111050														
ST-035 / SC-020	INT	POTATO CK	FW	8	0	0	11	0	0		11	0	0	
SC-019	SC	LAKE MARION	FW				32	0	0		44	0	0	
SC-023	SC	LAKE MARION	FW				23	0	0		23	0	0	
RS-01051	RS01	WHITE OAK CK	FW	4	0	0	4	0	0		4	0	0	
ST-036 / SC-023A	INT	LAKE MARION	FW	8	0	0	17	0	0		29	0	0	
03050112010														
SC-024	SC	SANTEE RVR	FW				29	0	0		41	0	0	
ST-537	BIO	DOCTOR BRANCH												
ST-536	BIO	BENNETTS BRANCH												
ST-016	INT	SANTEE RVR	FW	20	0	0	20	0	0		20	0	0	
03050112020														
SC-037	SC	REDIVERSION CANAL	FW				21	0	0		21	0	0	
ST-031 / SC-037A	INT	REDIVERSION CANAL	FW	20	0	0	20	0	0		20	1	5	240

SANTEE RIVER BASIN WATER QUALITY SUMMARY

STATION					DO	DO	DO	MEAN	TRENDS (88 -2002)					
NUMBER	TYPE	WATERBODY NAME	CLASS		N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG
03050112030														
ST-001	INT	SANTEE RVR	FW		55	3	5	3.217	I	170	0.117	D	167	-0.123
RS-02467	RS02	ECHAW CK	FW		12	7	58	3.479						
03050112050														
CSTL-112	INT	WAMBAW CK	FW		26	7	27	4.097	*	38	0.086	D	39	-0.19
03050112060														
ST-005	CS	N SANTEE RVR	FW/**SA**		28	2	7	4.585	*	85	0	D	85	-0.118
ST-005	CS	N SANTEE RVR	**FW**/SA		28	2	7	4.585	*	85	0	D	85	-0.118
RT-01654	RT01	MINIM CREEK	SA		11	1	9	4.6						
RO-01122	RO01	BIG DUCK CREEK	ORW		11	2	18	4.710						
MD-263	INT	SANTEE BAY	ORW		21	1	5	4.4						
RS-01056	RS01	CEDAR CK	FW		9	2	22	4.450						
ST-006	INT	S SANTEE RVR	FW/**SA**		55	5	9	4.290	*	173	-0.01	D	170	-0.086
ST-006	INT	S SANTEE RVR	**FW**/SA		55	5	9	4.290	*	173	-0.01	D	170	-0.086
RO-02004	RO02	S SANTEE RVR	ORW		11	1	9	4.87						

SANTEE RIVER BASIN WATER QUALITY SUMMARY

STATION				pH	pH	pH	MEAN	TRENDS (88-2002)			TURB	TURB	TURB	MEAN	TRENDS (88-2002)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	PH	N	MAG	N	EXC.	%	EXC.	TURB	N	MAG
03050112030																	
ST-001	INT	SANTEE RVR	FW	55	4	7	8.320	I	169	0.07	55	1	2	84	*	168	0
RS-02467	RS02	ECHAW CK	FW	12	0	0					12	0	0				
03050112050																	
CSTL-112	INT	WAMBAW CK	FW	26	0	0		I	38	0.052	27	0	0		I	39	0.879
03050112060																	
ST-005	CS	N SANTEE RVR	FW/**SA**	28	1	4	6.25	I	85	0.038	28	3	11	34.333	*	85	-0.108
ST-005	CS	N SANTEE RVR	**FW**/SA	28	0	0		I	85	0.038	28	0	0		*	85	-0.108
RT-01654	RT01	MINIM CREEK	SA	10	0	0					11	3	27	26.667			
RO-01122	RO01	BIG DUCK CREEK	ORW	10	0	0					11	0	0				
MD-263	INT	SANTEE BAY	ORW	20	1	5	5.78				21	1	5	45			
RS-01056	RS01	CEDAR CK	FW	9	0	0					10	0	0				
ST-006	INT	S SANTEE RVR	FW/**SA**	55	4	7	5.978	I	172	0.026	55	16	29	42.688	I	170	0.454
ST-006	INT	S SANTEE RVR	**FW**/SA	55	1	2	5.33	I	172	0.026	55	3	5	71.000	I	170	0.454
RO-02004	RO02	S SANTEE RVR	ORW	11	0	0					12	0	0				

SANTEE RIVER BASIN WATER QUALITY SUMMARY

STATION					TP	TP	TP	MEAN	TRENDS (92-2002)				TRENDS (88-2002)				TN	TN	TN	MEAN	TRENDS (88-2002)		
NUMBER	TYPE	WATERBODY NAME	CLASS		N	EXC.	%	EXC.	TP	N	MAG		TP	N	MAG		N	EXC.	%	EXC.	TN	N	MAG
03050112030																							
ST-001	INT	SANTEE RVR	FW						D	68	-0.003		D	110	-0.001						D	156	-0.019
RS-02467	RS02	ECHAW CK	FW																				
03050112050																							
CSTL-112	INT	WAMBAW CK	FW																		*	30	-0.002
03050112060																							
ST-005	CS	N SANTEE RVR	FW/**SA**						*	34	0		D	55	-0.003								
ST-005	CS	N SANTEE RVR	**FW**/SA						*	34	0		D	55	-0.003								
RT-01654	RT01	MINIM CREEK	SA																				
RO-01122	RO01	BIG DUCK CREEK	ORW																				
MD-263	INT	SANTEE BAY	ORW																				
RS-01056	RS01	CEDAR CK	FW																				
ST-006	INT	S SANTEE RVR	FW/**SA**						*	67	-0.003		D	110	-0.002						D	155	-0.009
ST-006	INT	S SANTEE RVR	**FW**/SA						*	67	-0.003		D	110	-0.002						D	155	-0.009
RO-02004	RO02	S SANTEE RVR	ORW																				

SANTEE RIVER BASIN WATER QUALITY SUMMARY

STATION				CHL	CHL	CHL	MEAN	TRENDS (88-2002)			GEO	BACT	BACT	BACT	MEAN	TRENDS (88-2002)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	TSS	N	MAG	MEAN	N	EXC.	%	EXC.	BACT	N	MAG
03050112030																		
ST-001	INT	SANTEE RVR	FW					*	118	0	28.6	54	0	0		D	164	-4.198
RS-02467	RS02	ECHAW CK	FW								223.8	12	4	33	875.0			
03050112050																		
CSTL-112	INT	WAMBAW CK	FW								142.5	27	3	11	500.0	*	39	7.747
03050112060																		
ST-005	CS	N SANTEE RVR	FW/**SA**								54.1	27	0	0		*	81	1.768
ST-005	CS	N SANTEE RVR	**FW**/SA								54.1	27	0	0		*	81	1.768
RT-01654	RT01	MINIM CREEK	SA								28.0	11	0	0				
RO-01122	RO01	BIG DUCK CREEK	ORW								9.2	10	0	0				
MD-263	INT	SANTEE BAY	ORW								2.5	21	0	0				
RS-01056	RS01	CEDAR CK	FW								288.4	10	5	50	1320.0			
ST-006	INT	S SANTEE RVR	FW/**SA**								103.6	57	7	12	638.6	I	171	2.412
ST-006	INT	S SANTEE RVR	**FW**/SA								103.6	57	7	12	638.6	I	171	2.412
RO-02004	RO02	S SANTEE RVR	ORW								12.7	11	0	0				

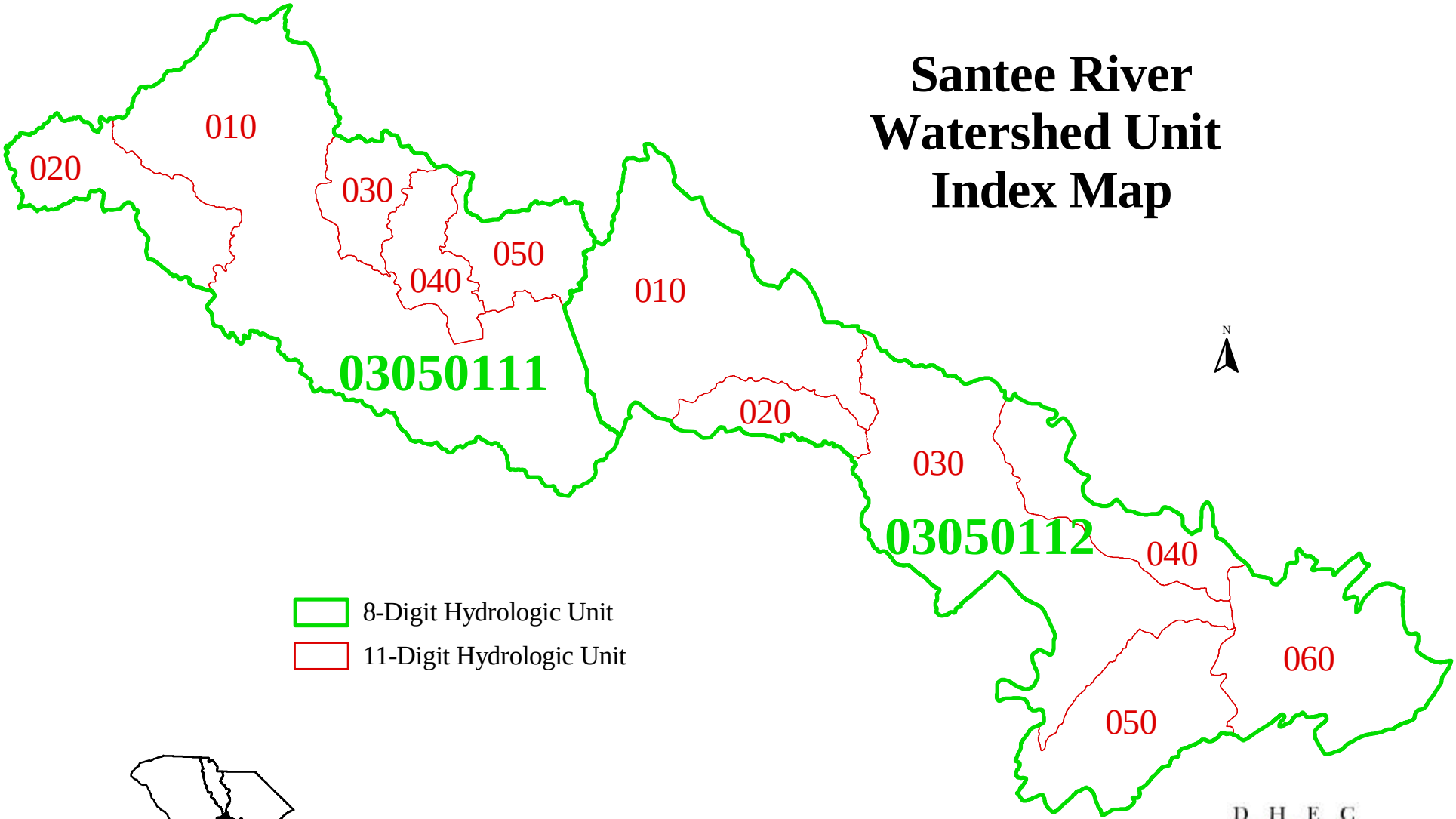
SANTEE RIVER BASIN WATER QUALITY SUMMARY

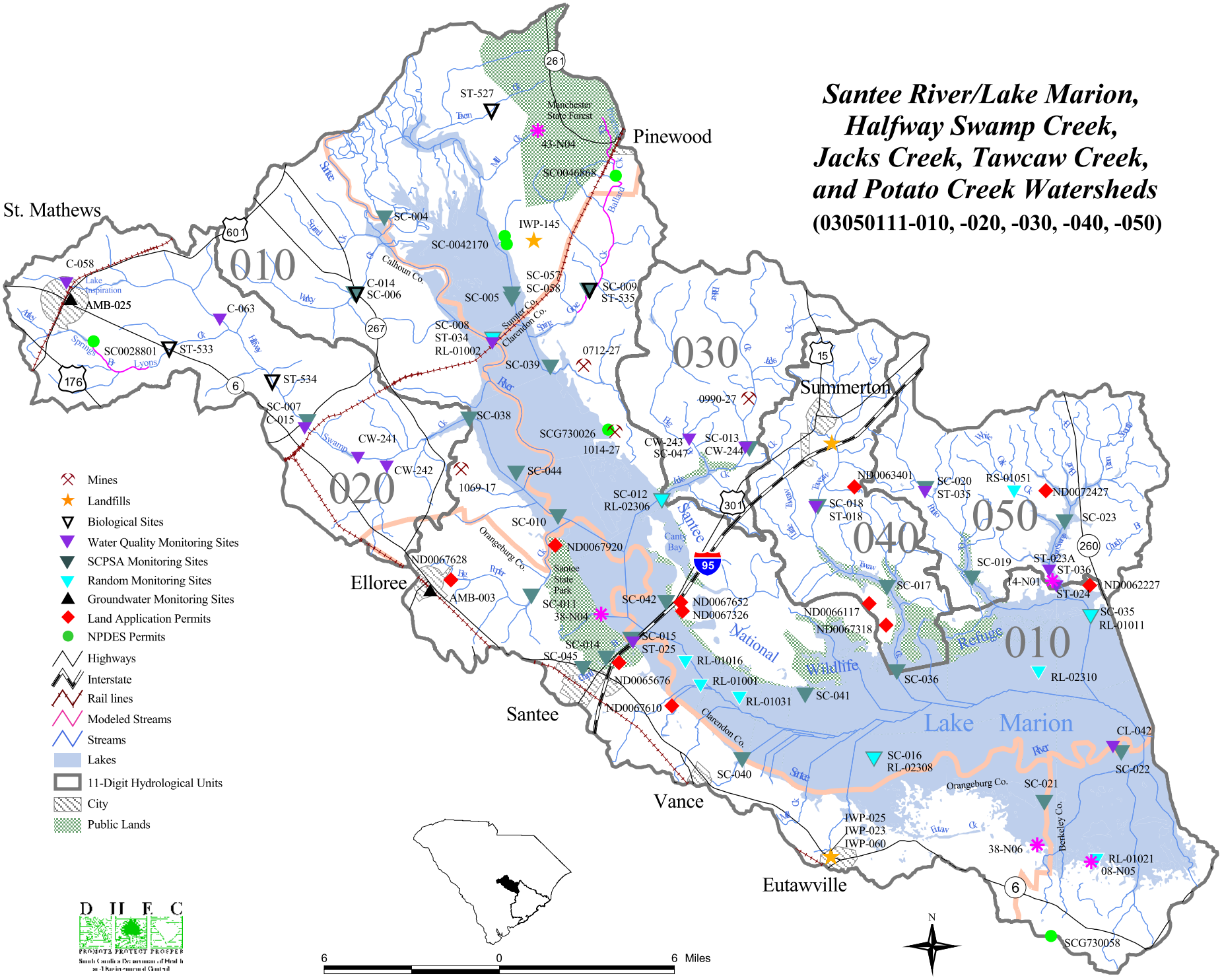
STATION					NH3	NH3	NH3		CD	CD	CD	MEAN		CR	CR	CR	MEAN		CU	CU	CU	MEAN		PB	PB	PB	MEAN
NUMBER	TYPE	WATERBODY NAME	CLASS		N	EXC.	%		N	EXC.	%	EXC.		N	EXC.	%	EXC.		N	EXC.	%	EXC.		N	EXC.	%	EXC.
03050112030																											
ST-001	INT	SANTEE RVR	FW		48	0	0		21	0	0			21	0	0			21	0	0			21	0	0	
RS-02467	RS02	ECHAW CK	FW		6	0	0		4	0	0			4	0	0			4	0	0			4	0	0	
03050112050																											
CSTL-112	INT	WAMBAW CK	FW		19	0	0		9	0	0			9	0	0			9	1	11	16		9	0	0	
03050112060																											
ST-005	CS	N SANTEE RVR	FW/**SA**		7	0	0		4	0	0			4	0	0			4	0	0			4	0	0	
ST-005	CS	N SANTEE RVR	**FW**/SA		7	0	0		4	0	0			4	0	0			4	0	0			4	0	0	
RT-01654	RT01	MINIM CREEK	SA		7	2	29		4	0	0			4	0	0			4	0	0			4	0	0	
RO-01122	RO01	BIG DUCK CREEK	ORW		6	2	33		4	0	0			4	0	0			4	0	0			3	0	0	
MD-263	INT	SANTEE BAY	ORW		14	3	21		7	0	0			7	0	0			7	1	14	17		7	0	0	
RS-01056	RS01	CEDAR CK	FW		6	0	0		4	0	0			4	0	0			4	0	0			4	0	0	
ST-006	INT	S SANTEE RVR	FW/**SA**		48	0	0		21	0	0			21	0	0			21	1	5	11		21	0	0	
ST-006	INT	S SANTEE RVR	**FW**/SA		48	0	0		21	0	0			21	0	0			21	1	5	11		21	0	0	
RO-02004	RO02	S SANTEE RVR	ORW		5	0	0		4	0	0			4	0	0			4	0	0			4	0	0	

SANTEE RIVER BASIN WATER QUALITY SUMMARY

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	HG N	HG EXC.	HG %	NI N	NI EXC.	NI %	MEAN EXC.	ZN N	ZN EXC.	ZN %	MEAN EXC.
03050112030														
ST-001	INT	SANTEE RVR	FW	21	0	0	21	0	0		21	0	0	
RS-02467	RS02	ECHAW CK	FW	4	0	0	4	0	0		4	0	0	
03050112050														
CSTL-112	INT	WAMBAW CK	FW	9	0	0	9	0	0		9	0	0	
03050112060														
ST-005	CS	N SANTEE RVR	FW/**SA**	4	0	0	4	0	0		4	0	0	
ST-005	CS	N SANTEE RVR	**FW**/SA	4	0	0	4	0	0		4	0	0	
RT-01654	RT01	MINIM CREEK	SA	4	0	0	4	0	0		4	0	0	
RO-01122	RO01	BIG DUCK CREEK	ORW	4	0	0	4	0	0		4	0	0	
MD-263	INT	SANTEE BAY	ORW	7	0	0	7	0	0		7	0	0	
RS-01056	RS01	CEDAR CK	FW	4	0	0	4	0	0		4	0	0	
ST-006	INT	S SANTEE RVR	FW/**SA**	21	0	0	21	1	5	110	21	1	5	200
ST-006	INT	S SANTEE RVR	**FW**/SA	21	0	0	21	0	0		21	1	5	200
RO-02004	RO02	S SANTEE RVR	ORW	4	0	0	4	0	0		4	0	0	

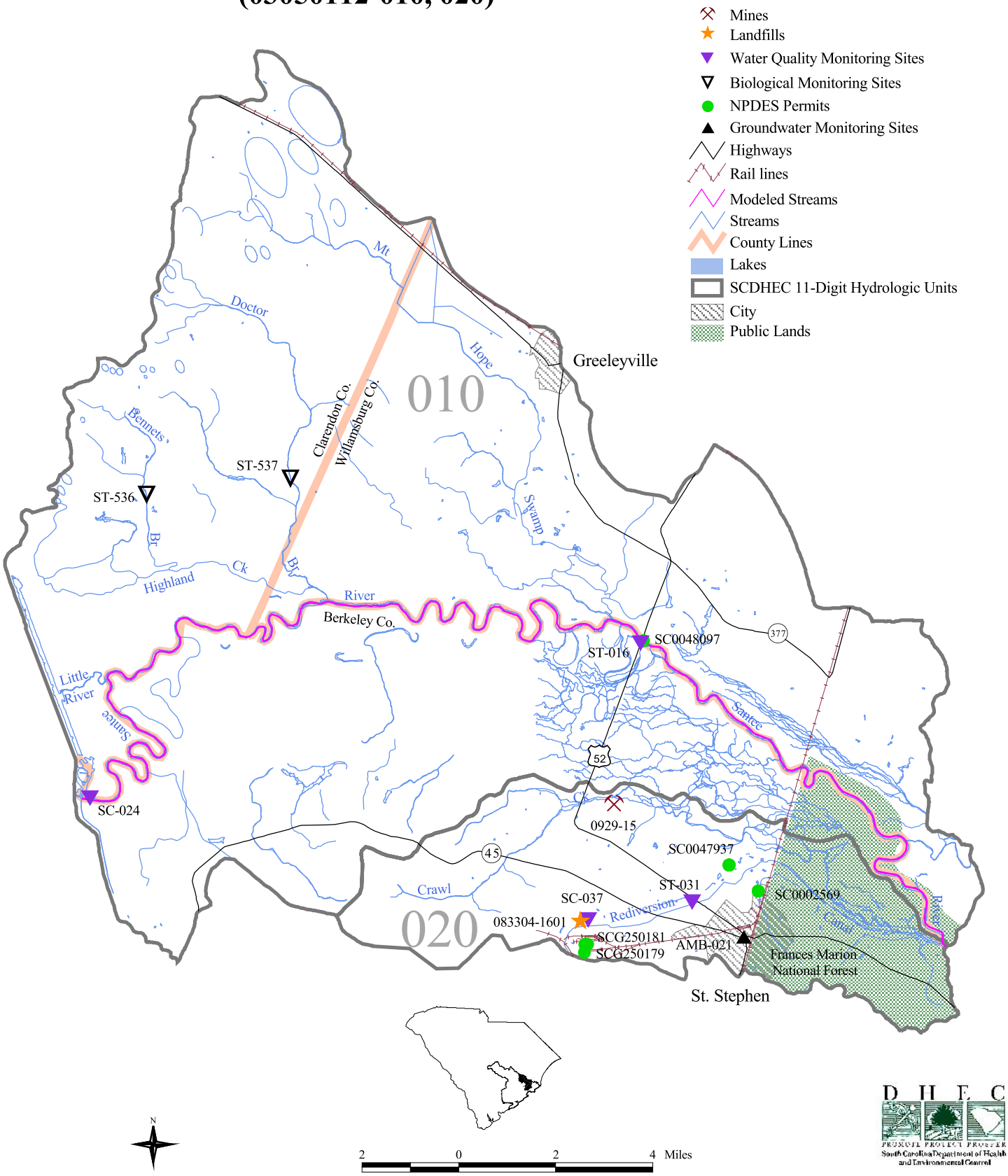
Santee River Watershed Unit Index Map




Santee River/Lake Marion, Halfway Swamp Creek, Jacks Creek, Tawcaw Creek, and Potato Creek Watersheds
(03050111-010, -020, -030, -040, -050)
St. Mathews
Pinewood
Summerton
Elloree
Santee
Vance
Eutawville
010
020
030
040
050
Lake Marion
Santee National Wildlife Refuge
Manchester State Forest
Santee State Park
Calhoun Co.
Sumter Co.
Clarendon Co.
Orangeburg Co.
Berkeley Co.
Mines
Landfills
Biological Sites
Water Quality Monitoring Sites
SCPSA Monitoring Sites
Random Monitoring Sites
Groundwater Monitoring Sites
Land Application Permits
NPDES Permits
Highways
Interstate
Rail lines
Modeled Streams
Streams
Lakes
11-Digit Hydrological Units
City
Public Lands
6 0 6 Miles
N

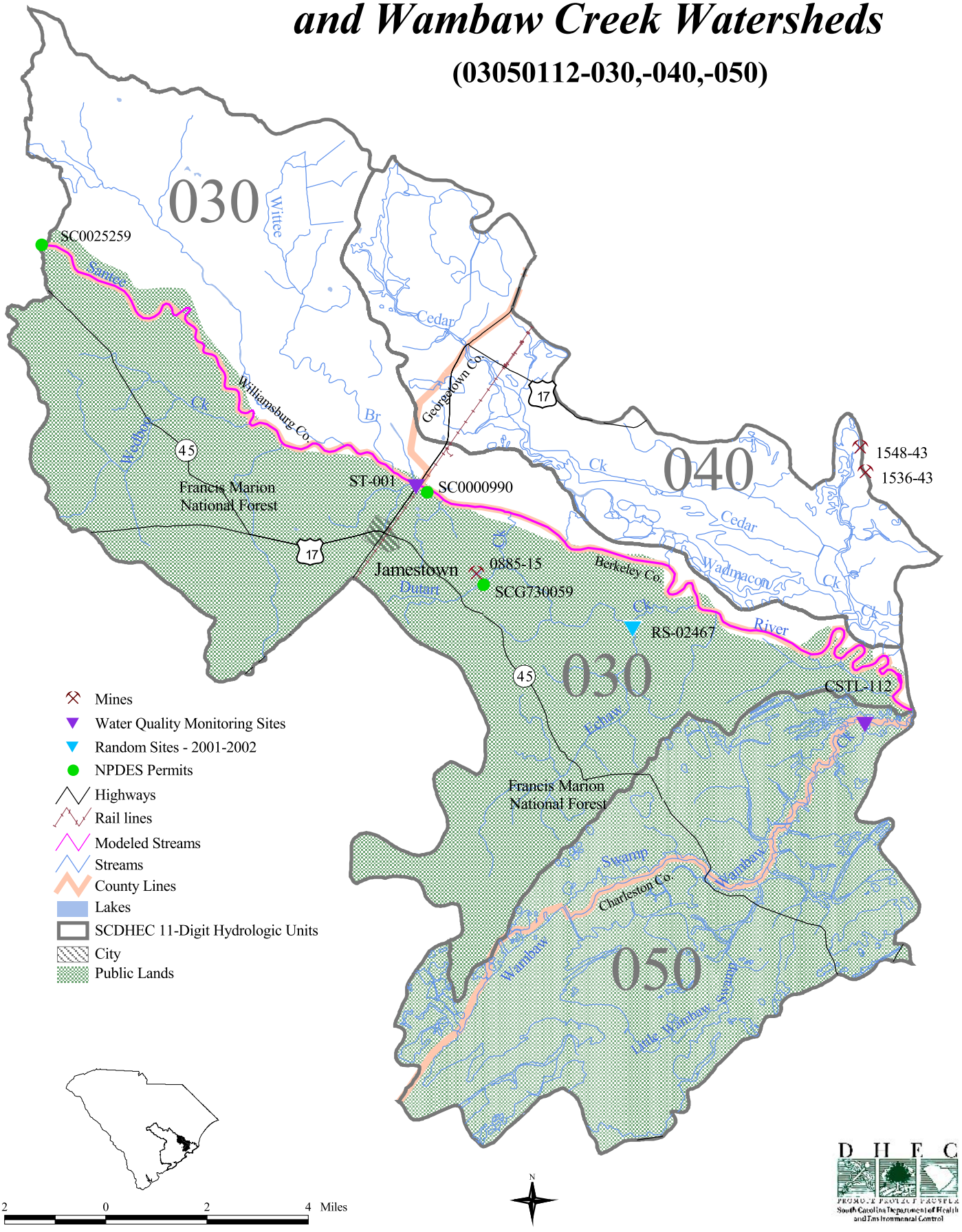
Santee River and Rediversion Canal Watersheds

(03050112-010, 020)

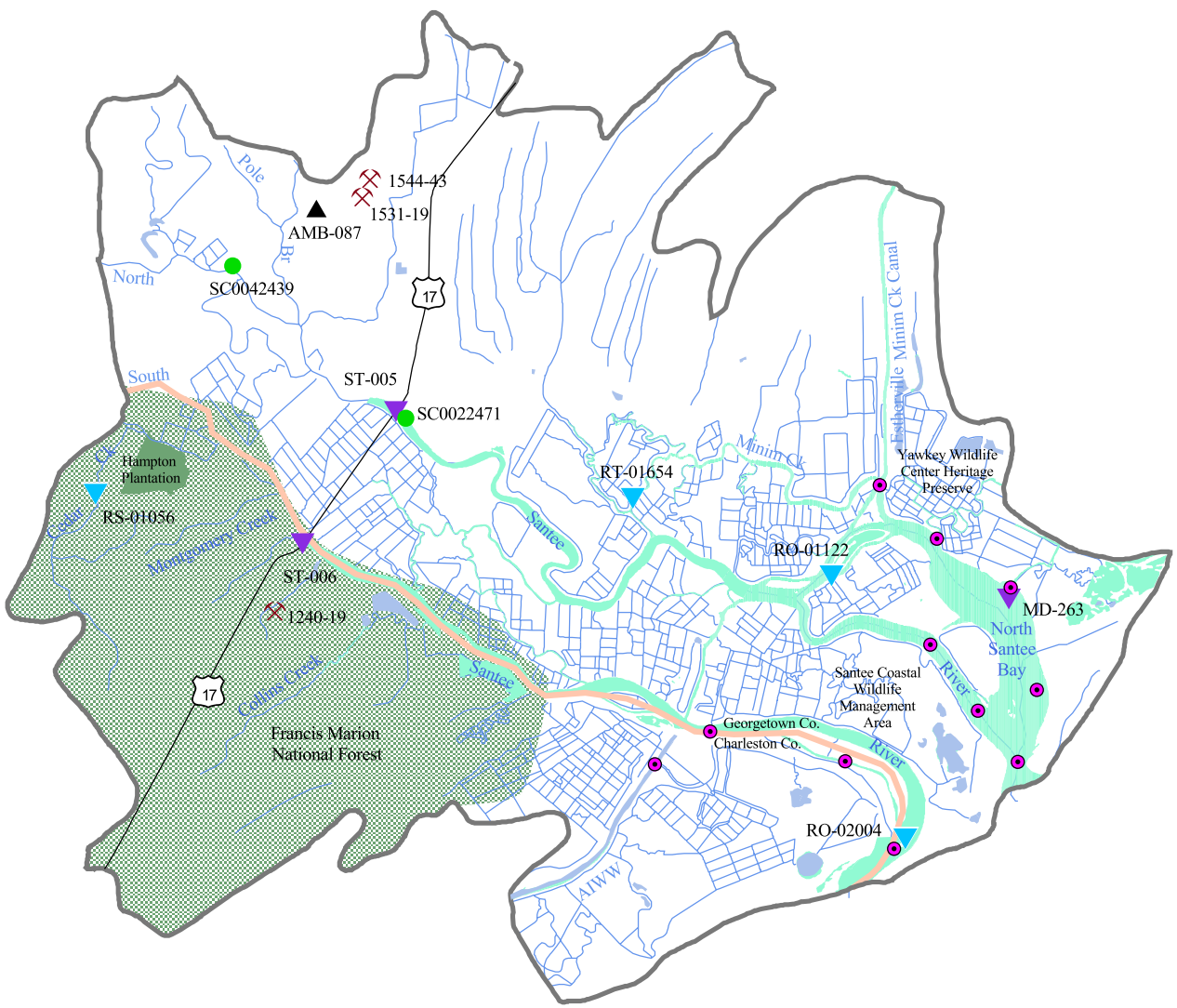


Santee River, Wadmacon Creek, and Wambaw Creek Watersheds

(03050112-030,-040,-050)



North and South Santee Rivers Watersheds
(03050112-060)



- NPDES Permits
- Mines
- Water Quality Monitoring Sites
- Groundwater Monitoring Sites
- Random Sites - 2001-2002
- Shellfish Monitoring Sites
- Highways
- Streams
- County Lines
- Lakes
- Estuaries
- 11-Digit Hydrologic Units
- City
- Public Lands

2 0 2 4 Miles

APPENDIX B.

Cooper River/Ashley River Basin

Ambient Water Quality Monitoring Site Descriptions

Station #	Type	Class	Description
03050201-010			
SC-031	SC	FW	Northern Quadrant of Lake Moultrie at mouth of Rediversion Canal
SC-028	SC	FW	NW Quadrant of Lake Moultrie near Angel's Landing cove
SC-043	SC	FW	Tributary flowing to Lake Moultrie from Cross Generating Station
SC-026	SC	FW	Lake Moultrie trib 0.4 mi upstream of SC 6
SC-027	SC	FW	SW Quadrant of Lake Moultrie, 0.75 mi E of shoreline
SC-034	SC	FW	Duck Pond Creek at SC 6
RL-02328	RL02	FW	SW Lake Moultrie near Duck Pond Creek, approx. 2 mi E of Cross
RL-02322	RL02	FW	NE Lake Moultrie, 3 mi from Bonneau Beach
ST-037/SC-030	INT/SC	FW	Lake Moultrie at Channel Marker 17
RL-02454	RL02	FW	SW Lake Moultrie in open water
RL-01006	RL01	FW	Lk Moultrie, 5.5mi N of Moncks Corner & 1.5mi NW of Camp Moultrie
RL-01026	RL01	FW	Lk Moultrie, 4.5mi N of Moncks Corner, 1.5mi NNE of S-08-5 ending
SC-046	SC	FW	SE Quadrant of Lake Moultrie at Pinopolis embayment
SC-032	SC	FW	SE Quadrant of Lake Moultrie at Channel Marker 2
CSTL-062/SC-033	P/INT/SC	FW	Tailrace Canal at US 52 & 17A below Lake Moultrie
03050201-020			
ST-007	S/W	FW	Walker Swamp at US 52 2.5 mi S of St. Stephens
RS-02461	RS02	FW	Wadboo Swamp at S-08-447 third bridge from west
CSTL-113	W/INT	FW	Wadboo Creek at SC 402
03050201-030			
CSTL-085	S/INT	FW	Pier in W. Branch Cooper River at end of Rice Mill Road in Pimlico
03050201-040			
RS-02483	RS02	FW	Turkey Creek at forest service rd 251 Irishtown fm SC 402
CSTL-123	INT	FW	East Branch Cooper River at Bonneau Ferry Plantation
03050201-050			
MD-152	P/W	FW/SB	Cooper River at S-08-503, 6.2 mi ESE of Goose Creek
MD-043	P/SPRP	SB	Cooper River at Channel Marker 72 near USN Ammo Depot
MD-044	P/W	SB	Cooper River below mouth of Goose Creek at Chan. Buoy 60
MD-249/MD-593	P/W	SB	Filbin Creek at Virginia Ave., North Charleston
MD-248	P/SPRP	SB	Cooper River at Mark Clark Bridge (I-526)
RT-01633	RT01	SB	Clouter Creek, 2.5 mi E of North Charleston
MD-045	P/INT	SB	Cooper River above mouth of Shipyard Ck at Chan Buoy 49
MD-243	P/W	SB	Shipyard Creek between Marker #6 and McAlloy Dock
MD-047	P/W	SB	Town Creek (W side of Drum Island) under Grace Mem. Brdg
MD-046	P/W	SB	Cooper River under Grace Memorial Bridge
03050201-060			
MD-240	P/W	FW	Foster Creek at Charleston CPW water intake
CSTL-124	INT	FW	Back River Reservoir in forebay equidistant from dam and shorelines
MD-217	P/W	FW	Durham Creek at S-08-9 bridge

Station #	Type	Class	Description
03050201-070			
MD-114	P/W	FW	Goose Creek at U.S. 52 N Charleston
RL-01008	RL01	FW	Goose Creek Reservoir, 2.3 mi S of Goose Creek town center
ST-033/CL-050	W	FW	Goose Creek Res. at 2nd power lines upstream of boat ramp
ST-032/CL-049	P/SPRP	FW	Goose Creek Reservoir 100 m upstream of dam
MD-039	P/INT	SB	Goose Creek at S-08-136 Bridge
03050201-080			
MD-115	P/INT	SFH	Wando River at S.C. 41
RO-02014	RO02	SFH	Wando River, 2.0 mi W of Philip
RO-01162	RO01	SFH	Wando River, 6.25 mi E of North Charleston
MD-264	INT	SFH	Wando River at I-526 Mark Clark Expressway
MD-198	P/W	SFH	Wando River between Rathall & Hobcaw Creeks
03050202-010			
CSTL-063	P/W	FW	Wassamassaw Swamp at U.S. 176
CSTL-078	W/INT	FW	Cypress Swamp at U.S. 78
03050202-020			
ST-007	S/W	FW	Walker Swamp at US 52 2.5 mi S of St. Stephens
RS-02461	RS02	FW	Wadboo Swamp at S-08-447 third bridge from west
CSTL-113	W/INT	FW	Wadboo Creek at SC 402
03050202-030			
CSTL-043	S/W	FW	Sawmill Branch at SC 78 E of Summerville
CSTL-013	P/INT	SA	Dorchester Creek at SC 165
CSTL-099	P/W	SB	Eagle Creek at SC 642 5 mi SSE of Summerville
03050202-040			
MD-049	P/SPRP	SA	Ashley River at Magnolia Gardens
MD-246	P/W	SA*	Church Creek mouth
MD-135	S/W	SA*	Ashley River at S.C. 7 (North Bridge)
MD-052	P/INT	SA	Ashley River at Sal RR Bridge
03050202-050			
MD-121	S/W	SFH	Log Bridge Creek at SC 162
MD-202	P/INT	SFH	Stono River at S-10-20, 2 mi upstream of Clemson Exp. Station
MD-025	S/W	SFH	Mouth of Elliott Cut at Edge Water Dr. (S-10-26 off Hwy 17)
MD-020	P/W	SB	Mouth of Wappoo Creek Between Channel Markers 3 & 4
03050202-060			
MD-265	INT	SFH/ORW	Alligator Creek at State shellfish ground
MD-266	INT	SFH/ORW	Casino Creek at closure line
RT-02016	RT02	ORW	East Fork of Devils Den Creek headwaters
MD-203	P/W	SFH	Jeremy Creek near boat landing at McClellanville Town Hall
RT-01623	RT01	SFH	Matthews Creek Tributary, 1 mi S of McClellanville
MD-267	INT	SFH	Five Fathom Creek at Bull River
RO-02008	RO02	SFH	Five Fathom Creek near mouth of Santee Path Creek
MD-250	W	SFH	Awendaw Creek at US 17
Station #	**Type**	**Class**	**Description**

03050202-060 (continued)

MD-268	W/INT	SFH	AWENDAW CREEK AT MARKER #57
RT-01668	RT01	SFH	VANDERHORST CREEK, 11.75 MI SW OF MCCLELLANVILLE
MD-269	INT	SFH	SEWEE BAY AT MOORES LANDING
RT-02004	RT02	ORW	BACK CREEK TRIBUTARY ON BULL ISLAND
MD-270	INT	ORW	BULLYARD SOUND AT MARKER #104
MD-271	INT	SFH	HAMLIN SOUND
MD-272	INT	SFH	LOWER HAMLIN CREEK AT SITE OF NEW BRIDGE
RT-02006	RT02	SFH	CONCH CREEK, 1 MI FROM SAWYER BRIDGE

03050202-070

MD-069	INT	SB/SFH	AIWW AT SC 703, E OF MT. PLEASANT
MD-071	P/SPRP	SB	SHEM CREEK AT BRIDGE ON US 17
MD-247	P/INT	SB	CHARLESTON HARBOR NEAR MT. PLEASANT WWTP DIFFUSER
MD-034	P/W	SA	RT. BANK OF ASHLEY R. BETW MOUTH OF JAMES ISL. CK & DILL CK
MD-165	P/INT	SB	CHARLESTON HARBOR AT FT.JOHNSON PIER AT MARINE SCIENCE LAB
RO-02016	RO02	SB	CHARLESTON HARBOR, 0.1 MI E OF FT. JOHNSON
MD-048	P/W	SB	S. CHANNEL CHAS HARBOR OFF FT JOHNSON , BELL BUOY 28
RT-01644	RT01	SB	CLARK SOUND, 4 MI S OF CHARLESTON
RT-02008	RT02	SFH	SECOND SISTER CREEK, 0.1 MI FROM CONFL WITH LIGHTHOUSE CREEK
MD-274	INT	SFH	FOLLY CREEK, AT SECESSIONVILLE POLLUTION LINE
MD-130	INT	SFH	FOLLY CREEK AT SC 171
MD-026	P/W	SFH	STONO RIVER AT SC 700
RO-01144	RO01	SFH	STONO RIVER, 7.5 MI SW OF CHARLESTON
MD-206	S/INT	SFH	STONO RIVER AT ABBAPOOLA CREEK
MD-208	S/W	SFH	STONO RIVER MOUTH AT BUOY 10 OFF SANDY POINT
MD-273	INT	SFH	KIAWAH RIVER ON THE FLATS
MD-207	S/W	SFH	KIAWAH RIVER MOUTH AT STONO RIVER
RT-01642	RT01	SFH	TRIBUTARY TO STONO INLET, 11 MI SW OF CHARLESTON

For further details concerning sampling frequency and parameters sampled, please visit our website at www.scdhec.gov/eqc/admin/html/eqcpubs.html#wqreports for the current State of S.C. Monitoring Strategy.

Water Quality Data

Spreadsheet Legend

Station Information:

STATION NUMBER Station ID

TYPE SCDHEC station type code

- **P** = Primary station, sampled monthly all year round
- **S** = Secondary station, sampled monthly May - October
- **P*** = Secondary station upgraded to primary station parameter coverage and sampling frequency for basin study
- **W** = Special watershed station added for the Santee River Basin study
- **BIO** = Indicates macroinvertebrate community data assessed
- **INT** = Integrator Station (approximates a Primary station)
- **RL** = Random Lake station
- **RO** = Random Open water station
- **RS** = Random Stream station
- **RT** = Random Tide Creek station

WATERBODY NAME Stream or Lake Name

CLASS Stream classification at the point where monitoring station is located

Parameter Abbreviations and Parameter Measurement Units:

DO	Dissolved Oxygen (mg/l)	**NH3**	Ammonia (mg/l)
BOD	Five-Day Biochemical Oxygen Demand (mg/l)	**CD**	Cadmium (ug/l)
pH	pH (SU)	**CR**	Chromium (ug/l)
TP	Total Phosphorus (mg/l)	**CU**	Copper (ug/l)
TN	Total Nitrogen (mg/l)	**PB**	Lead (ug/l)
TURB	Turbidity (NTU)	**HG**	Mercury (ug/l)
TSS	Total Suspended Solids (mg/l)	**NI**	Nickel (ug/l)
BACT	Fecal Coliform Bacteria (#/100 ml)	**ZN**	Zinc (ug/l)

Statistical Abbreviations:

N For *standards compliance*, number of surface samples collected between January 1998 and December 2002.
For *trends*, number of surface samples collected between January 1984 and December 2002.
For *total phosphorus*, an additional trend period of January 1992 to December 2002 is also reported.

EXC. Number of samples contravening the appropriate standard

% Percentage of samples contravening the appropriate standard

MEAN EXC. Mean of samples that contravened the applied standard

MED For *heavy metals with a human health criterion*, this is the median of all surface samples between January 1997 and December 2001. DL indicates that the median was the detection limit.

MAG Magnitude of any statistically significant trend, average change per year, expressed in parameter measurement units

GEO MEAN Geometric mean of fecal coliform bacteria samples collected between January 1998 and December 2002

Key to Trends:

D Statistically significant decreasing trend in parameter concentration

I Statistically significant increasing trend in parameter concentration

***** No statistically significant trend

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	DO N	DO EXC.	DO %	MEAN EXC.	TRENDS (88 -2002) DO	N	MAG	BOD	N	MAG
03050201010													
SC-031	SC	LAKE MOULTRIE	FW	58	0	0							
SC-028	SC	LAKE MOULTRIE	FW	55	0	0							
SC-043	SC	UNNAMED TRIB	FW	31	0	0							
SC-026	SC	UNNAMED TRIB	FW	4	1	25	4.6						
SC-027	SC	LAKE MOULTRIE	FW	56	0	0							
SC-034	SC	DUCK POND CK	FW	3	0	0							
RL-02328	RL02	LAKE MOULTRIE	FW	8	0	0							
RL-02322	RL02	LAKE MOULTRIE	FW	7	0	0							
ST-037 / SC-030	INT	LAKE MOULTRIE	FW	58	0	0							
RL-02454	RL02	LAKE MOULTRIE	FW	9	0	0							
RL-01006	RL01	LAKE MOULTRIE	FW	8	0	0							
RL-01026	RL01	LAKE MOULTRIE	FW	8	0	0							
SC-046	SC	LAKE MOULTRIE	FW	57	0	0							
SC-032	SC	LAKE MOULTRIE	FW	58	0	0							
CSTL-062 / SC-033	INT	TAIL RACE CANAL BELOW LAKE MOULTRIE	FW	77	1	1	4.4	D	149	-0.045	D	148	-0.089
03050201020													
ST-007	CS	WALKER SWAMP	FW	22	2	9	4.500	*	66	0	D	67	-0.13
RS-02461	RS02	WADBOO SWAMP	FW	11	7	64	2.284						
CSTL-113	INT	WADBOO SWAMP	FW	27	9	33	4.382	*	39	-0.002	D	38	-0.184
03050201030													
CSTL-085	INT	COOPER RVR	FW	34	0	0		I	92	0.051	D	88	-0.118
03050201040													
RS-02483	RS02	TURKEY CK	FW	12	8	67	1.845						
CSTL-123	INT	E BR COOPER RVR	FW	20	5	25	4.122						
03050201060													
MD-152	CS	COOPER RVR	FW/**SB**	41	1	2	0.8	I	159	0.043	D	141	-0.068
MD-152	CS	COOPER RVR	**FW**/SB	41	3	7	3.550	I	159	0.043	D	141	-0.068
MD-043	SPRP	COOPER RVR	SB	54	1	2	0.3	I	168	0.034	D	155	-0.089
MD-044	CS	COOPER RVR	SB	42	0	0		I	167	0.036	D	147	-0.084
MD-249	CS	FILBIN CK	SB	45	6	13	3.122	I	98	0.063	D	97	-0.149
MD-248	SPRP	COOPER RVR	SB	53	0	0		I	103	0.098	D	100	-0.228
RT-01633	RT01	CLOUTER CREEK	SB	11	1	9	3.37						
MD-045	INT	COOPER RVR	SB	53	0	0		I	171	0.06	D	153	-0.099
MD-243	CS	SHIPYARD CK	SB	41	0	0		I	133	0.062	D	126	-0.1
MD-047	CS	TOWN CK, COOPER RVR	SB	43	0	0		I	163	0.05	D	146	-0.093
MD-046	CS	COOPER RVR	SB	45	0	0		I	160	0.04	D	145	-0.098

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION				pH	pH	pH	MEAN	TRENDS (88-2002)			TURB	TURB	TURB	MEAN	TRENDS (88-2002)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	PH	N	MAG	N	EXC.	%	EXC.	TURB	N	MAG
03050201010																	
SC-031	SC	LAKE MOULTRIE	FW	57	0	0					55	2	4	28.250			
SC-028	SC	LAKE MOULTRIE	FW	54	0	0					54	1	2	25.9			
SC-043	SC	UNNAMED TRIB	FW	32	2	6	5.545				32	1	3	59.9			
SC-026	SC	UNNAMED TRIB	FW	4	1	25	5.81				4	0	0				
SC-027	SC	LAKE MOULTRIE	FW	55	0	0					54	1	2	26.7			
SC-034	SC	DUCK POND CK	FW	3	0	0					3	0	0				
RL-02328	RL02	LAKE MOULTRIE	FW	8	0	0					10	0	0				
RL-02322	RL02	LAKE MOULTRIE	FW	7	0	0					9	0	0				
ST-037 / SC-030	INT	LAKE MOULTRIE	FW	57	0	0					56	1	2	28.2			
RL-02454	RL02	LAKE MOULTRIE	FW	9	0	0					11	0	0				
RL-01006	RL01	LAKE MOULTRIE	FW	8	0	0					7	0	0				
RL-01026	RL01	LAKE MOULTRIE	FW	8	0	0					8	0	0				
SC-046	SC	LAKE MOULTRIE	FW	56	0	0					57	0	0				
SC-032	SC	LAKE MOULTRIE	FW	57	0	0					56	1	2	26			
CSTL-062 / SC-033	INT	TAIL RACE CANAL BELOW LAKE MOULTRIE	FW	77	0	0		I	146	0.037	79	0	0		*	148	-0.027
03050201020																	
ST-007	CS	WALKER SWAMP	FW	22	1	5	4.17	*	67	0.02	22	1	5	120	*	67	0.025
RS-02461	RS02	WADBOO SWAMP	FW	11	0	0					11	2	18	57.000			
CSTL-113	INT	WADBOO SWAMP	FW	27	0	0		I	39	0.031	27	0	0		D	39	-0.571
03050201030																	
CSTL-085	INT	COOPER RVR	FW	33	2	6	8.610	I	91	0.076	34	0	0		*	91	-0.058
03050201040																	
RS-02483	RS02	TURKEY CK	FW	12	6	50	5.685				12	0	0				
CSTL-123	INT	E BR COOPER RVR	FW	20	0	0					20	0	0				
03050201060																	
MD-152	CS	COOPER RVR	FW/**SB**	41	1	2	5.98	I	158	0.015	40	0	0		*	144	0
MD-152	CS	COOPER RVR	**FW**/SB	41	1	2	5.98	I	158	0.015	40	0	0		*	144	0
MD-043	SPRP	COOPER RVR	SB	53	1	2	8.9	*	164	0.002	51	2	4	53.500	*	154	0
MD-044	CS	COOPER RVR	SB	42	0	0		*	167	0	41	0	0		*	147	0
MD-249	CS	FILBIN CK	SB	45	3	7	6.750	I	98	0.023	44	5	11	46.600	D	97	-0.495
MD-248	SPRP	COOPER RVR	SB	52	1	2	9.09	I	102	0.024	52	0	0		D	101	-0.375
RT-01633	RT01	CLOUTER CREEK	SB	11	1	9	8.94				11	0	0				
MD-045	INT	COOPER RVR	SB	52	2	4	9.190	*	170	0	51	2	4	44.500	*	154	-0.02
MD-243	CS	SHIPYARD CK	SB	42	2	5	9.295	*	133	0.01	40	0	0		D	125	-0.066
MD-047	CS	TOWN CK, COOPER RVR	SB	43	1	2	9.17	*	162	-0.004	41	1	2	36	*	147	-0.027
MD-046	CS	COOPER RVR	SB	45	3	7	8.017	*	160	-0.003	42	1	2	38	*	144	0.01

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION				TP	TP	TP	MEAN	TRENDS (92-2002)			TRENDS (88-2002)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	TP	N	MAG	TP	N	MAG
03050201010													
SC-031	SC	LAKE MOULTRIE	FW	34	1	3	0.12						
SC-028	SC	LAKE MOULTRIE	FW	32	1	3	0.1						
SC-043	SC	UNNAMED TRIB	FW										
SC-026	SC	UNNAMED TRIB	FW										
SC-027	SC	LAKE MOULTRIE	FW	32	0	0							
SC-034	SC	DUCK POND CK	FW										
RL-02328	RL02	LAKE MOULTRIE	FW	8	0	0							
RL-02322	RL02	LAKE MOULTRIE	FW	8	0	0							
ST-037 / SC-030	INT	LAKE MOULTRIE	FW	38	1	3	0.14						
RL-02454	RL02	LAKE MOULTRIE	FW	9	0	0							
RL-01006	RL01	LAKE MOULTRIE	FW										
RL-01026	RL01	LAKE MOULTRIE	FW										
SC-046	SC	LAKE MOULTRIE	FW	34	0	0							
SC-032	SC	LAKE MOULTRIE	FW	34	1	3	0.1						
CSTL-062 / SC-033	INT	TAIL RACE CANAL BELOW LAKE MOULTRIE	FW					*	65	0	D	111	0
03050201020													
ST-007	CS	WALKER SWAMP	FW								D	43	-0.013
RS-02461	RS02	WADBOO SWAMP	FW										
CSTL-113	INT	WADBOO SWAMP	FW										
03050201030													
CSTL-085	INT	COOPER RVR	FW					*	35	0	*	54	0
03050201040													
RS-02483	RS02	TURKEY CK	FW										
CSTL-123	INT	E BR COOPER RVR	FW										
03050201060													
MD-152	CS	COOPER RVR	FW/**SB**					*	63	-0.002	*	104	0
MD-152	CS	COOPER RVR	**FW**/SB					*	63	-0.002	*	104	0
MD-043	SPRP	COOPER RVR	SB					D	62	-0.003	D	102	0
MD-044	CS	COOPER RVR	SB					*	72	0	*	112	0
MD-249	CS	FILBIN CK	SB					*	51	0	*	51	0
MD-248	SPRP	COOPER RVR	SB					D	49	-0.017	D	49	-0.017
RT-01633	RT01	CLOUTER CREEK	SB										
MD-045	INT	COOPER RVR	SB					*	72	0	D	110	0
MD-243	CS	SHIPYARD CK	SB					D	61	-0.002	*	81	0
MD-047	CS	TOWN CK, COOPER RVR	SB					*	72	0	D	112	-0.002
MD-046	CS	COOPER RVR	SB					*	72	0	D	110	-0.001

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION				TN	TN	TN	MEAN	TRENDS (88-2002)			CHL	CHL	CHL	MEAN	TRENDS (88-2002)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	TN	N	MAG	N	EXC.	%	EXC.	TSS	N	MAG
03050201010																	
SC-031	SC	LAKE MOULTRIE	FW	40	0	0					51	0	0				
SC-028	SC	LAKE MOULTRIE	FW	37	0	0					47	0	0				
SC-043	SC	UNNAMED TRIB	FW														
SC-026	SC	UNNAMED TRIB	FW														
SC-027	SC	LAKE MOULTRIE	FW	38	1	3	2.53				47	0	0				
SC-034	SC	DUCK POND CK	FW														
RL-02328	RL02	LAKE MOULTRIE	FW	8	0	0					6	0	0				
RL-02322	RL02	LAKE MOULTRIE	FW	8	0	0					6	0	0				
ST-037 / SC-030	INT	LAKE MOULTRIE	FW	49	1	2	6.21				51	0	0				
RL-02454	RL02	LAKE MOULTRIE	FW	9	0	0					7	0	0				
RL-01006	RL01	LAKE MOULTRIE	FW	6	0	0					5	0	0				
RL-01026	RL01	LAKE MOULTRIE	FW	5	0	0					5	0	0				
SC-046	SC	LAKE MOULTRIE	FW	40	0	0					50	1	2	40.9			
SC-032	SC	LAKE MOULTRIE	FW	40	0	0					52	0	0				
CSTL-062 / SC-033	INT	TAIL RACE CANAL BELOW LAKE MOULTRIE	FW					D	152	-0.012							
03050201020																	
ST-007	CS	WALKER SWAMP	FW														
RS-02461	RS02	WADBOO SWAMP	FW														
CSTL-113	INT	WADBOO SWAMP	FW					D	30	-0.027							
03050201030																	
CSTL-085	INT	COOPER RVR	FW														
03050201040																	
RS-02483	RS02	TURKEY CK	FW														
CSTL-123	INT	E BR COOPER RVR	FW														
03050201060																	
MD-152	CS	COOPER RVR	FW/**SB**					D	140	-0.013							
MD-152	CS	COOPER RVR	**FW**/SB					D	140	-0.013							
MD-043	SPRP	COOPER RVR	SB					D	145	-0.017							
MD-044	CS	COOPER RVR	SB					D	150	-0.017							
MD-249	CS	FILBIN CK	SB					*	92	-0.01							
MD-248	SPRP	COOPER RVR	SB					D	93	-0.063							
RT-01633	RT01	CLOUTER CREEK	SB														
MD-045	INT	COOPER RVR	SB					D	152	-0.024							
MD-243	CS	SHIPYARD CK	SB					D	116	-0.02					*	70	-0.063
MD-047	CS	TOWN CK, COOPER RVR	SB					D	148	-0.026							
MD-046	CS	COOPER RVR	SB					D	145	-0.024							

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	GEO MEAN	BACT N	BACT EXC.	BACT %	MEAN EXC.	TRENDS (88-2002) BACT	TRENDS (88-2002) N	TRENDS (88-2002) MAG	NH3 N	NH3 EXC.	NH3 %
03050201010														
SC-031	SC	LAKE MOULTRIE	FW	1.3	55	0	0							
SC-028	SC	LAKE MOULTRIE	FW	1.1	53	0	0							
SC-043	SC	UNNAMED TRIB	FW	104.8	27	8	30	620.0						
SC-026	SC	UNNAMED TRIB	FW	272.8	3	2	67	535.0						
SC-027	SC	LAKE MOULTRIE	FW	1.1	53	0	0							
SC-034	SC	DUCK POND CK	FW	154.9	2	0	0							
RL-02328	RL02	LAKE MOULTRIE	FW	1.1	10	0	0					8	0	0
RL-02322	RL02	LAKE MOULTRIE	FW	1.2	9	0	0					8	0	0
ST-037 / SC-030	INT	LAKE MOULTRIE	FW	1.7	56	0	0					14	0	0
RL-02454	RL02	LAKE MOULTRIE	FW	1.1	11	0	0					8	0	0
RL-01006	RL01	LAKE MOULTRIE	FW	1.3	5	0	0					8	0	0
RL-01026	RL01	LAKE MOULTRIE	FW	1.0	7	0	0					7	0	0
SC-046	SC	LAKE MOULTRIE	FW	4.2	55	0	0							
SC-032	SC	LAKE MOULTRIE	FW	2.1	56	0	0							
CSTL-062 / SC-033	INT	TAIL RACE CANAL BELOW LAKE MOULTRIE	FW	13.5	75	2	3	590.0	D	148	-0.754	47	0	0
03050201020														
ST-007	CS	WALKER SWAMP	FW	338.2	21	9	43	776.7	*	62	-14.963	8	0	0
RS-02461	RS02	WADBOO SWAMP	FW	101.1	10	2	20	1600.0				6	0	0
CSTL-113	INT	WADBOO SWAMP	FW	152.1	27	3	11	703.3	D	39	-16.564	17	0	0
03050201030														
CSTL-085	INT	COOPER RVR	FW	41.5	33	2	6	710.0	*	89	-0.331	12	0	0
03050201040														
RS-02483	RS02	TURKEY CK	FW	138.6	12	2	17	1250.0				6	0	0
CSTL-123	INT	E BR COOPER RVR	FW	27.1	18	0	0					10	0	0
03050201060														
MD-152	CS	COOPER RVR	FW/**SB**	26.6	40	0	0		*	146	-0.442	38	0	0
MD-152	CS	COOPER RVR	**FW**/SB	26.6	40	0	0		*	146	-0.442	38	0	0
MD-043	SPRP	COOPER RVR	SB	28.4	53	0	0		D	157	-1.124	44	0	0
MD-044	CS	COOPER RVR	SB	23.3	42	1	2	1600.0	D	149	-1.929	34	0	0
MD-249	CS	FILBIN CK	SB	501.7	45	24	53	1454.2	*	98	0	40	1	3
MD-248	SPRP	COOPER RVR	SB	24.2	53	0	0		D	103	-3.027	39	0	0
RT-01633	RT01	CLOUTER CREEK	SB	35.0	11	0	0					6	0	0
MD-045	INT	COOPER RVR	SB	18.4	52	1	2	500.0	D	155	-3.792	33	0	0
MD-243	CS	SHIPYARD CK	SB	25.2	40	1	3	900.0	D	125	-4.102	26	0	0
MD-047	CS	TOWN CK, COOPER RVR	SB	28.2	41	0	0		D	147	-5.514	22	0	0
MD-046	CS	COOPER RVR	SB	13.4	43	0	0		D	146	-1.289	25	0	0

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	CD N	CD EXC.	CD %	MEAN EXC.	CR N	CR EXC.	CR %	MEAN EXC.	CU N	CU EXC.	CU %	MEAN EXC.	PB N	PB EXC.	PB %	MEAN EXC.
03050201010																			
SC-031	SC	LAKE MOULTRIE	FW	44	0	0		44	0	0		44	0	0		44	0	0	
SC-028	SC	LAKE MOULTRIE	FW	42	0	0		42	0	0		42	0	0		41	0	0	
SC-043	SC	UNNAMED TRIB	FW	28	0	0		28	0	0		28	1	4	5.31	27	0	0	
SC-026	SC	UNNAMED TRIB	FW	4	0	0		4	0	0		4	0	0		4	0	0	
SC-027	SC	LAKE MOULTRIE	FW	41	0	0		41	0	0		41	0	0		40	0	0	
SC-034	SC	DUCK POND CK	FW	2	0	0		2	0	0		2	0	0		2	0	0	
RL-02328	RL02	LAKE MOULTRIE	FW	14	0	0		14	0	0		14	0	0		14	0	0	
RL-02322	RL02	LAKE MOULTRIE	FW	13	0	0		13	0	0		13	1	8	28	13	0	0	
ST-037 / SC-030	INT	LAKE MOULTRIE	FW	50	0	0		50	0	0		50	0	0		49	0	0	
RL-02454	RL02	LAKE MOULTRIE	FW	15	0	0		15	0	0		15	0	0		15	0	0	
RL-01006	RL01	LAKE MOULTRIE	FW	11	0	0		11	0	0		11	0	0		11	0	0	
RL-01026	RL01	LAKE MOULTRIE	FW	12	0	0		12	0	0		12	0	0		12	0	0	
SC-046	SC	LAKE MOULTRIE	FW	44	0	0		44	0	0		44	0	0		44	0	0	
SC-032	SC	LAKE MOULTRIE	FW	44	0	0		44	0	0		44	1	2	9.54	43	0	0	
CSTL-062 / SC-033	INT	TAIL RACE CANAL BELOW LAKE MOULTRIE	FW	62	0	0		62	0	0		62	0	0		62	0	0	
03050201020																			
ST-007	CS	WALKER SWAMP	FW	9	0	0		9	0	0		9	0	0		9	0	0	
RS-02461	RS02	WADBOO SWAMP	FW	4	1	25	15	4	0	0		4	0	0		4	0	0	
CSTL-113	INT	WADBOO SWAMP	FW	10	0	0		10	0	0		10	0	0		10	0	0	
03050201030																			
CSTL-085	INT	COOPER RVR	FW	8	0	0		8	0	0		8	0	0		8	0	0	
03050201040																			
RS-02483	RS02	TURKEY CK	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CSTL-123	INT	E BR COOPER RVR	FW	8	0	0		8	0	0		8	0	0		8	0	0	
03050201060																			
MD-152	CS	COOPER RVR	FW/**SB**	13	0	0		13	0	0		13	0	0		13	0	0	
MD-152	CS	COOPER RVR	**FW**/SB	13	0	0		13	0	0		13	0	0		13	0	0	
MD-043	SPRP	COOPER RVR	SB	18	0	0		18	0	0		18	0	0		18	0	0	
MD-044	CS	COOPER RVR	SB	14	0	0		14	0	0		14	1	7	20	14	0	0	
MD-249	CS	FILBIN CK	SB	16	0	0		16	0	0		16	0	0		16	0	0	
MD-248	SPRP	COOPER RVR	SB	18	0	0		18	0	0		18	0	0		18	0	0	
RT-01633	RT01	CLOUTER CREEK	SB	4	0	0		4	0	0		4	0	0		4	0	0	
MD-045	INT	COOPER RVR	SB	18	0	0		18	0	0		18	0	0		18	0	0	
MD-243	CS	SHIPYARD CK	SB	13	0	0		13	0	0		13	0	0		13	0	0	
MD-047	CS	TOWN CK, COOPER RVR	SB	14	0	0		14	0	0		14	0	0		14	0	0	
MD-046	CS	COOPER RVR	SB	14	0	0		14	0	0		14	0	0		14	0	0	

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	HG N	HG EXC.	HG %	NI N	NI EXC.	NI %	MEAN EXC.	ZN N	ZN EXC.	ZN %	MEAN EXC.
03050201010														
SC-031	SC	LAKE MOULTRIE	FW				32	0	0		44	0	0	
SC-028	SC	LAKE MOULTRIE	FW				30	0	0		42	0	0	
SC-043	SC	UNNAMED TRIB	FW				17	0	0		28	1	4	146
SC-026	SC	UNNAMED TRIB	FW				3	0	0		4	0	0	
SC-027	SC	LAKE MOULTRIE	FW				29	0	0		41	0	0	
SC-034	SC	DUCK POND CK	FW				2	0	0		2	0	0	
RL-02328	RL02	LAKE MOULTRIE	FW	4	0	0	4	0	0		14	0	0	
RL-02322	RL02	LAKE MOULTRIE	FW	4	0	0	4	0	0		13	0	0	
ST-037 / SC-030	INT	LAKE MOULTRIE	FW	7	0	0	38	0	0		50	0	0	
RL-02454	RL02	LAKE MOULTRIE	FW	4	0	0	4	0	0		15	0	0	
RL-01006	RL01	LAKE MOULTRIE	FW	4	0	0	11	0	0		11	0	0	
RL-01026	RL01	LAKE MOULTRIE	FW	4	0	0	12	0	0		12	0	0	
SC-046	SC	LAKE MOULTRIE	FW				32	0	0		44	0	0	
SC-032	SC	LAKE MOULTRIE	FW				32	0	0		44	0	0	
CSTL-062 / SC-033	INT	TAIL RACE CANAL BELOW LAKE MOULTRIE	FW	20	0	0	50	0	0		62	0	0	
03050201020														
ST-007	CS	WALKER SWAMP	FW	9	0	0	9	0	0		8	0	0	
RS-02461	RS02	WADBOO SWAMP	FW	4	0	0	4	0	0		4	0	0	
CSTL-113	INT	WADBOO SWAMP	FW	10	0	0	10	0	0		10	0	0	
03050201030														
CSTL-085	INT	COOPER RVR	FW	8	0	0	8	0	0		8	0	0	
03050201040														
RS-02483	RS02	TURKEY CK	FW	4	0	0	4	0	0		4	0	0	
CSTL-123	INT	E BR COOPER RVR	FW	8	0	0	8	0	0		8	1	13	100
03050201060														
MD-152	CS	COOPER RVR	FW/**SB**	13	0	0	13	0	0		13	0	0	
MD-152	CS	COOPER RVR	**FW**/SB	13	0	0	13	0	0		13	0	0	
MD-043	SPRP	COOPER RVR	SB	18	0	0	18	0	0		18	0	0	
MD-044	CS	COOPER RVR	SB	14	0	0	14	0	0		14	0	0	
MD-249	CS	FILBIN CK	SB	16	0	0	16	0	0		16	0	0	
MD-248	SPRP	COOPER RVR	SB	18	0	0	18	0	0		18	0	0	
RT-01633	RT01	CLOUTER CREEK	SB	4	0	0	4	0	0		4	0	0	
MD-045	INT	COOPER RVR	SB	18	0	0	18	0	0		18	1	6	160
MD-243	CS	SHIPYARD CK	SB	13	0	0	13	0	0		13	0	0	
MD-047	CS	TOWN CK, COOPER RVR	SB	14	0	0	14	0	0		14	0	0	
MD-046	CS	COOPER RVR	SB	14	0	0	14	0	0		14	0	0	

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION				DO	DO	DO	MEAN	TRENDS (88 -2002)					
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG
03050201060													
MD-240	CS	FOSTER CK	FW	45	31	69	2.398	*	154	0	D	150	-0.114
CSTL-124	INT	LAKE, BACK RIVER RESERVOIR	FW	21	9	43	3.831						
MD-217	CS	DURHAM CK	FW	45	2	4	4.850	*	161	0.025	D	156	-0.117
03050201070													
MD-114	CS	GOOSE CK	FW	43	42	98	1.700	D	149	-0.05	D	134	-0.142
RL-01008	RL01	LAKE, GOOSE CK RESERVOIR	FW	10	2	20	4.375						
ST-033	CS	LAKE, GOOSE CK RESERVOIR	FW	22	2	9	4.670						
ST-032	SPRP	LAKE, GOOSE CK RESERVOIR	FW	54	4	7	4.248	I	129	0.102	*	101	-0.05
MD-039	INT	GOOSE CK	SB	55	1	2	3.66	*	140	0.028	D	136	-0.103
03050201080													
MD-115	INT	WANDO RVR	SFH	56	14	25	4.476	*	183	0	D	171	-0.1
RO-02014	RO02	WANDO RVR	SFH	12	1	8	4.57						
RO-01162	RO01	WANDO RIVER	SFH	11	2	18	4.560						
MD-264	INT	WANDO RVR	SFH	21	1	5	4.98						
MD-198	CS	WANDO RVR	SFH	43	3	7	4.533	I	148	0.04	D	145	-0.098
03050202010													
CSTL-063	CS	WASSAMASSAW SWAMP	FW	46	22	48	3.071	*	160	-0.043	D	158	-0.081
CSTL-078	INT	CYPRESS SWAMP	FW	29	22	76	2.927	*	41	-0.015	*	42	-0.169
03050202020													
CSTL-102	INT	ASHLEY RVR	FW/**SA**	55	18	33	4.429	*	145	-0.028	D	143	-0.14
CSTL-102	INT	ASHLEY RVR	**FW**/SA	55	18	33	4.429	*	145	-0.028	D	143	-0.14
03050202030													
CSTL-043	CS	SAWMILL BRANCH	FW	27	12	44	3.861	*	77	-0.06	D	77	-0.196
CSTL-013	INT	DORCHESTER CK	SA	55	12	22	3.563	D	137	-0.172	D	134	-0.193
CSTL-099	CS	EAGLE CK	SB	45	1	2	3.8	*	133	-0.035	D	132	-0.215
03050202040													
MD-049	SPRP	ASHLEY RVR	SA	54	17	31	4.067	*	170	0.025	D	169	-0.151
MD-246	CS	CHURCH CK	SA-SP	44	2	5	3.675	I	108	0.067	D	104	-0.178
MD-135	CS	ASHLEY RVR	SA-SP	26	0	0		I	91	0.167	D	73	-0.076
MD-052	INT	ASHLEY RVR	SA	55	1	2	4.82	I	169	0.051	D	159	-0.1
03050202050													
MD-121	CS	LOG BRIDGE CK	SFH	24	11	46	3.326	*	56	-0.033	D	59	-0.1
MD-202	INT	STONO RVR	SFH	53	13	25	4.257	I	168	0.037	D	168	-0.116
MD-025	CS	ELLIOTT CUT	SFH	27	3	11	4.437	*	81	0.037	D	76	-0.204
MD-020	CS	WAPPOO CK	SB	42	0	0		I	156	0.05	D	151	-0.084

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION				pH	pH	pH	MEAN	TRENDS (88-2002)			TURB	TURB	TURB	MEAN	TRENDS (88-2002)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	PH	N	MAG	N	EXC.	%	EXC.	TURB	N	MAG
03050201060																	
MD-240	CS	FOSTER CK	FW	45	3	7	5.307	I	154	0.047	44	0	0		D	152	-0.156
CSTL-124	INT	LAKE, BACK RIVER RESERVOIR	FW	21	0	0					23	0	0				
MD-217	CS	DURHAM CK	FW	44	1	2	5.5	I	160	0.041	44	0	0		*	158	-0.02
03050201070																	
MD-114	CS	GOOSE CK	FW	42	4	10	5.653	I	146	0.031	42	0	0		D	143	-0.287
RL-01008	RL01	LAKE, GOOSE CK RESERVOIR	FW	10	0	0					11	0	0				
ST-033	CS	LAKE, GOOSE CK RESERVOIR	FW	22	5	23	9.080				15	0	0				
ST-032	SPRP	LAKE, GOOSE CK RESERVOIR	FW	53	9	17	9.152	I	127	0.081	51	1	2	28	*	109	0.104
MD-039	INT	GOOSE CK	SB	55	3	5	6.280	I	141	0.012	53	4	8	29.250	*	138	0
03050201080																	
MD-115	INT	WANDO RVR	SFH	56	0	0		*	183	-0.005	54	7	13	45.329	I	168	0.181
RO-02014	RO02	WANDO RVR	SFH	12	1	8	9.07				12	0	0				
RO-01162	RO01	WANDO RIVER	SFH	11	1	9	9.3				12	0	0				
MD-264	INT	WANDO RVR	SFH	21	2	10	9.250				22	0	0				
MD-198	CS	WANDO RVR	SFH	42	1	2	9.15	*	145	-0.004	40	0	0		*	143	-0.04
03050202010																	
CSTL-063	CS	WASSAMASSAW SWAMP	FW	46	1	2	5.03	I	159	0.025	47	0	0		D	160	-0.283
CSTL-078	INT	CYPRESS SWAMP	FW	29	1	3	3.67	*	41	0.01	30	5	17	71.800	*	42	-0.055
03050202020																	
CSTL-102	INT	ASHLEY RVR	FW/**SA**	55	11	20	6.191	I	144	0.033	54	12	22	38.083	*	143	0
CSTL-102	INT	ASHLEY RVR	**FW**/SA	55	2	4	5.735	I	144	0.033	54	1	2	57	*	143	0
03050202030																	
CSTL-043	CS	SAWMILL BRANCH	FW	27	0	0		I	77	0.06	27	5	19	72.800	*	77	0.285
CSTL-013	INT	DORCHESTER CK	SA	55	3	5	6.763	*	137	0.01	54	10	19	64.800	D	135	-0.84
CSTL-099	CS	EAGLE CK	SB	45	3	7	6.123	*	133	0.012	44	14	32	43.357	*	132	-0.215
03050202040																	
MD-049	SPRP	ASHLEY RVR	SA	54	3	6	7.693	*	167	0.004	55	28	51	39.857	*	170	0.154
MD-246	CS	CHURCH CK	SA-SP	44	0	0		I	111	0.02	42	9	21	36.444	D	103	-1.273
MD-135	CS	ASHLEY RVR	SA-SP	26	0	0		*	89	-0.004	24	3	13	29.000	*	73	0.085
MD-052	INT	ASHLEY RVR	SA	54	1	2	8.9	D	164	-0.008	53	1	2	26	*	158	0
03050202050																	
MD-121	CS	LOG BRIDGE CK	SFH	24	0	0		I	57	0.062	25	4	16	40.500	I	59	1.076
MD-202	INT	STONO RVR	SFH	53	1	2	6.24	*	169	0.001	54	9	17	43.222	*	169	0.144
MD-025	CS	ELLIOTT CUT	SFH	27	0	0		*	81	0.001	24	2	8	32.500	D	75	-0.99
MD-020	CS	WAPPOO CK	SB	42	0	0		D	153	-0.01	42	2	5	30.000	*	149	0.067

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION				TP	TP	TP	MEAN	TRENDS (92-2002)			TRENDS (88-2002)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	TP	N	MAG	TP	N	MAG
03050201060													
MD-240	CS	FOSTER CK	FW					*	65	0.003	*	102	0
CSTL-124	INT	LAKE, BACK RIVER RESERVOIR	FW	12	0	0							
MD-217	CS	DURHAM CK	FW					*	68	0	*	112	0
03050201070													
MD-114	CS	GOOSE CK	FW					*	76	0.004	*	102	-0.005
RL-01008	RL01	LAKE, GOOSE CK RESERVOIR	FW										
ST-033	CS	LAKE, GOOSE CK RESERVOIR	FW	13	5	38	0.120						
ST-032	SPRP	LAKE, GOOSE CK RESERVOIR	FW	17	7	41	0.133	*	67	0	*	76	-0.002
MD-039	INT	GOOSE CK	SB					*	62	-0.003	*	82	-0.003
03050201080													
MD-115	INT	WANDO RVR	SFH					*	77	0	*	121	0
RO-02014	RO02	WANDO RVR	SFH										
RO-01162	RO01	WANDO RIVER	SFH										
MD-264	INT	WANDO RVR	SFH										
MD-198	CS	WANDO RVR	SFH					*	62	0	D	102	-0.001
03050202010													
CSTL-063	CS	WASSAMASSAW SWAMP	FW					*	68	0	D	110	-0.001
CSTL-078	INT	CYPRESS SWAMP	FW										
03050202020													
CSTL-102	INT	ASHLEY RVR	FW/**SA**					*	58	-0.017	*	82	-0.013
CSTL-102	INT	ASHLEY RVR	**FW**/SA					*	58	-0.017	*	82	-0.013
03050202030													
CSTL-043	CS	SAWMILL BRANCH	FW								D	45	-0.009
CSTL-013	INT	DORCHESTER CK	SA					D	56	-0.013	D	76	-0.023
CSTL-099	CS	EAGLE CK	SB					*	60	-0.031	D	81	-0.035
03050202040													
MD-049	SPRP	ASHLEY RVR	SA					*	64	-0.012	D	109	-0.013
MD-246	CS	CHURCH CK	SA-SP					*	60	-0.013	*	60	-0.013
MD-135	CS	ASHLEY RVR	SA-SP					*	38	-0.007	*	57	-0.001
MD-052	INT	ASHLEY RVR	SA					*	65	0	*	104	-0.001
03050202050													
MD-121	CS	LOG BRIDGE CK	SFH								*	33	0
MD-202	INT	STONO RVR	SFH					I	68	0.003	*	110	0
MD-025	CS	ELLIOTT CUT	SFH								D	48	-0.009
MD-020	CS	WAPPOO CK	SB					*	64	0	D	106	-0.001

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION				TN	TN	TN	MEAN	TRENDS (88-2002)			CHL	CHL	CHL	MEAN	TRENDS (88-2002)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	TN	N	MAG	N	EXC.	%	EXC.	TSS	N	MAG
03050201060																	
MD-240	CS	FOSTER CK	FW					D	140	-0.013							
CSTL-124	INT	LAKE, BACK RIVER RESERVOIR	FW	11	0	0					11	0	0				
MD-217	CS	DURHAM CK	FW					D	150	-0.012							
03050201070																	
MD-114	CS	GOOSE CK	FW					D	140	-0.016							
RL-01008	RL01	LAKE, GOOSE CK RESERVOIR	FW	5	0	0					6	0	0				
ST-033	CS	LAKE, GOOSE CK RESERVOIR	FW	9	0	0					9	8	89	75.14			
ST-032	SPRP	LAKE, GOOSE CK RESERVOIR	FW	42	1	2	1.64	*	101	-0.015	28	8	29	71.46			
MD-039	INT	GOOSE CK	SB					D	107	-0.044							
03050201080																	
MD-115	INT	WANDO RVR	SFH					D	167	-0.02							
RO-02014	RO02	WANDO RVR	SFH														
RO-01162	RO01	WANDO RIVER	SFH														
MD-264	INT	WANDO RVR	SFH														
MD-198	CS	WANDO RVR	SFH					D	136	-0.025							
03050202010																	
CSTL-063	CS	WASSAMASSAW SWAMP	FW					D	150	-0.023							
CSTL-078	INT	CYPRESS SWAMP	FW														
03050202020																	
CSTL-102	INT	ASHLEY RVR	FW/**SA**					D	103	-0.032							
CSTL-102	INT	ASHLEY RVR	**FW**/SA					D	103	-0.032							
03050202030																	
CSTL-043	CS	SAWMILL BRANCH	FW														
CSTL-013	INT	DORCHESTER CK	SA					D	100	-0.045							
CSTL-099	CS	EAGLE CK	SB					D	101	-0.036							
03050202040																	
MD-049	SPRP	ASHLEY RVR	SA					D	152	-0.043							
MD-246	CS	CHURCH CK	SA-SP					D	95	-0.056							
MD-135	CS	ASHLEY RVR	SA-SP														
MD-052	INT	ASHLEY RVR	SA					D	145	-0.019							
03050202050																	
MD-121	CS	LOG BRIDGE CK	SFH														
MD-202	INT	STONO RVR	SFH					D	148	-0.024							
MD-025	CS	ELLIOTT CUT	SFH														
MD-020	CS	WAPPOO CK	SB					D	141	-0.018							

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	GEO MEAN	BACT N	BACT EXC.	BACT %	MEAN EXC.	TRENDS (88-2002) BACT	TRENDS (88-2002) N	TRENDS (88-2002) MAG	NH3 N	NH3 EXC.	NH3 %
03050201060														
MD-240	CS	FOSTER CK	FW	88.5	45	4	9	6250.0	D	151	-3.964	40	0	0
CSTL-124	INT	LAKE, BACK RIVER RESERVOIR	FW	4.7	22	0	0					11	0	0
MD-217	CS	DURHAM CK	FW	33.4	45	1	2	900.0	*	161	-0.5	39	0	0
03050201070														
MD-114	CS	GOOSE CK	FW	54.5	43	5	12	940.0	D	137	-1.71	38	0	0
RL-01008	RL01	LAKE, GOOSE CK RESERVOIR	FW	9.8	11	0	0					5	0	0
ST-033	CS	LAKE, GOOSE CK RESERVOIR	FW	5.5	15	0	0					10	0	0
ST-032	SPRP	LAKE, GOOSE CK RESERVOIR	FW	7.1	53	0	0		*	102	0	43	0	0
MD-039	INT	GOOSE CK	SB	321.8	55	27	49	992.6	D	139	-44.185	46	0	0
03050201080														
MD-115	INT	WANDO RVR	SFH	14.4	56	4	7	500.0	*	166	0	41	0	0
RO-02014	RO02	WANDO RVR	SFH	3.0	12	0	0					5	0	0
RO-01162	RO01	WANDO RIVER	SFH	4.2	12	0	0					1	0	0
MD-264	INT	WANDO RVR	SFH	4.9	22	0	0					8	0	0
MD-198	CS	WANDO RVR	SFH	9.9	41	0	0		D	145	-1.251	26	0	0
03050202010														
CSTL-063	CS	WASSAMASSAW SWAMP	FW	136.4	47	9	19	686.7	I	155	6.239	40	0	0
CSTL-078	INT	CYPRESS SWAMP	FW	170.1	30	6	20	871.7	*	42	9.51	18	0	0
03050202020														
CSTL-102	INT	ASHLEY RVR	FW/**SA**	254.5	53	13	25	685.4	I	139	7.2	44	0	0
CSTL-102	INT	ASHLEY RVR	**FW**/SA	254.5	53	13	25	685.4	I	139	7.2	44	0	0
03050202030														
CSTL-043	CS	SAWMILL BRANCH	FW	278.0	27	13	48	1016.2	*	74	6.354	5	0	0
CSTL-013	INT	DORCHESTER CK	SA	315.4	53	22	42	1305.5	*	132	1.378	44	0	0
CSTL-099	CS	EAGLE CK	SB	437.8	45	24	53	867.1	*	132	-4.973	40	0	0
03050202040														
MD-049	SPRP	ASHLEY RVR	SA	237.8	55	18	33	1155.6	*	168	-1.205	43	1	2
MD-246	CS	CHURCH CK	SA-SP	120.3	43	7	16	1085.7	D	104	-14.913	34	0	0
MD-135	CS	ASHLEY RVR	SA-SP	56.3	25	0	0		*	77	0	5	0	0
MD-052	INT	ASHLEY RVR	SA	42.6	54	3	6	1366.7	D	159	-6.03	28	0	0
03050202050														
MD-121	CS	LOG BRIDGE CK	SFH	159.5	25	6	24	1183.3	*	57	0	4	1	25
MD-202	INT	STONO RVR	SFH	37.8	54	5	9	1460.0	*	167	-1.002	35	1	3
MD-025	CS	ELLIOTT CUT	SFH	21.6	24	1	4	900.0	D	73	-10.28	5	0	0
MD-020	CS	WAPPOO CK	SB	32.8	42	2	5	1600.0	D	150	-2.584	26	0	0

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	CD N	CD EXC.	CD %	MEAN EXC.	CR N	CR EXC.	CR %	MEAN EXC.	CU N	CU EXC.	CU %	MEAN EXC.	PB N	PB EXC.	PB %	MEAN EXC.
03050201060																			
MD-240	CS	FOSTER CK	FW	16	0	0		16	0	0		16	1	6	20	16	0	0	
CSTL-124	INT	LAKE, BACK RIVER RESERVOIR	FW	8	0	0		8	0	0		8	2	25	43.5	8	0	0	
MD-217	CS	DURHAM CK	FW	15	0	0		15	0	0		15	0	0		15	0	0	
03050201070																			
MD-114	CS	GOOSE CK	FW	15	1	7	14	15	0	0		15	1	7	16	15	0	0	
RL-01008	RL01	LAKE, GOOSE CK RESERVOIR	FW	4	0	0		4	0	0		4	0	0		4	0	0	
ST-033	CS	LAKE, GOOSE CK RESERVOIR	FW	5	0	0		5	0	0		5	2	40	27.5	5	0	0	
ST-032	SPRP	LAKE, GOOSE CK RESERVOIR	FW	18	1	6	20	18	0	0		18	1	6	30	18	0	0	
MD-039	INT	GOOSE CK	SB	20	0	0		20	0	0		20	0	0		20	0	0	
03050201080																			
MD-115	INT	WANDO RVR	SFH	22	0	0		22	0	0		21	2	10	20.0	22	0	0	
RO-02014	RO02	WANDO RVR	SFH	3	0	0		3	0	0		3	0	0		3	0	0	
RO-01162	RO01	WANDO RIVER	SFH	4	0	0		4	0	0		4	0	0		4	0	0	
MD-264	INT	WANDO RVR	SFH	7	0	0		7	0	0		7	0	0		7	0	0	
MD-198	CS	WANDO RVR	SFH	14	0	0		14	0	0		14	0	0		14	0	0	
03050202010																			
CSTL-063	CS	WASSAMASSAW SWAMP	FW	16	0	0		16	0	0		16	2	13	16.5	16	0	0	
CSTL-078	INT	CYPRESS SWAMP	FW	10	0	0		10	1	10	80	10	0	0		10	0	0	
03050202020																			
CSTL-102	INT	ASHLEY RVR	FW/**SA**	19	0	0		19	0	0		19	0	0		19	0	0	
CSTL-102	INT	ASHLEY RVR	**FW**/SA	19	0	0		19	0	0		19	0	0		19	0	0	
03050202030																			
CSTL-043	CS	SAWMILL BRANCH	FW	4	0	0		4	0	0		4	0	0		4	0	0	
CSTL-013	INT	DORCHESTER CK	SA	19	0	0		19	0	0		19	0	0		19	0	0	
CSTL-099	CS	EAGLE CK	SB	16	0	0		16	0	0		16	1	6	30	16	0	0	
03050202040																			
MD-049	SPRP	ASHLEY RVR	SA	20	0	0		20	0	0		20	2	10	20.5	20	0	0	
MD-246	CS	CHURCH CK	SA-SP	15	0	0		15	0	0		15	1	7	11	15	0	0	
MD-135	CS	ASHLEY RVR	SA-SP	4	0	0		4	0	0		4	1	25	11	4	0	0	
MD-052	INT	ASHLEY RVR	SA	19	0	0		19	0	0		19	0	0		19	0	0	
03050202050																			
MD-121	CS	LOG BRIDGE CK	SFH	4	0	0		4	0	0		4	0	0		4	0	0	
MD-202	INT	STONO RVR	SFH	19	0	0		19	0	0		19	2	11	12.5	19	0	0	
MD-025	CS	ELLIOTT CUT	SFH	4	0	0		4	0	0		4	0	0		4	0	0	
MD-020	CS	WAPPOO CK	SB	15	0	0		15	0	0		15	1	7	11	15	0	0	

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	HG N	HG EXC.	HG %	NI N	NI EXC.	NI %	MEAN EXC.	ZN N	ZN EXC.	ZN %	MEAN EXC.
03050201060														
MD-240	CS	FOSTER CK	FW	16	0	0	16	0	0		16	0	0	
CSTL-124	INT	LAKE, BACK RIVER RESERVOIR	FW	8	0	0	8	0	0		8	0	0	
MD-217	CS	DURHAM CK	FW	15	0	0	15	0	0		15	0	0	
03050201070														
MD-114	CS	GOOSE CK	FW	15	0	0	15	0	0		15	1	7	84
RL-01008	RL01	LAKE, GOOSE CK RESERVOIR	FW	4	0	0	4	0	0		4	0	0	
ST-033	CS	LAKE, GOOSE CK RESERVOIR	FW	5	0	0	5	0	0		5	0	0	
ST-032	SPRP	LAKE, GOOSE CK RESERVOIR	FW	18	0	0	18	0	0		18	0	0	
MD-039	INT	GOOSE CK	SB	20	0	0	20	0	0		20	0	0	
03050201080														
MD-115	INT	WANDO RVR	SFH	22	0	0	22	0	0		22	0	0	
RO-02014	RO02	WANDO RVR	SFH	3	0	0	3	0	0		3	0	0	
RO-01162	RO01	WANDO RIVER	SFH	4	0	0	4	0	0		4	0	0	
MD-264	INT	WANDO RVR	SFH	7	0	0	7	0	0		7	0	0	
MD-198	CS	WANDO RVR	SFH	14	0	0	14	0	0		14	0	0	
03050202010														
CSTL-063	CS	WASSAMASSAW SWAMP	FW	16	0	0	16	1	6	640	16	0	0	
CSTL-078	INT	CYPRESS SWAMP	FW	10	0	0	10	0	0		10	2	20	134.5
03050202020														
CSTL-102	INT	ASHLEY RVR	FW/**SA**	19	0	0	19	0	0		19	0	0	
CSTL-102	INT	ASHLEY RVR	**FW**/SA	19	0	0	19	0	0		19	0	0	
03050202030														
CSTL-043	CS	SAWMILL BRANCH	FW	4	0	0	4	0	0		4	1	25	190
CSTL-013	INT	DORCHESTER CK	SA	19	0	0	19	0	0		19	1	5	120
CSTL-099	CS	EAGLE CK	SB	16	0	0	16	0	0		16	0	0	
03050202040														
MD-049	SPRP	ASHLEY RVR	SA	20	0	0	20	3	15	141.7	20	0	0	
MD-246	CS	CHURCH CK	SA-SP	15	0	0	15	0	0		15	0	0	
MD-135	CS	ASHLEY RVR	SA-SP	4	0	0	4	0	0		4	0	0	
MD-052	INT	ASHLEY RVR	SA	19	0	0	19	0	0		19	0	0	
03050202050														
MD-121	CS	LOG BRIDGE CK	SFH	4	0	0	4	0	0		4	0	0	
MD-202	INT	STONO RVR	SFH	19	0	0	19	0	0		19	0	0	
MD-025	CS	ELLIOTT CUT	SFH	4	0	0	4	0	0		4	0	0	
MD-020	CS	WAPPOO CK	SB	15	0	0	15	0	0		15	0	0	

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION					DO	DO	DO	MEAN	TRENDS (88 -2002)					
NUMBER	TYPE	WATERBODY NAME	CLASS		N	EXC.	%	EXC.	DO	N	MAG	BOD	N	MAG
03050202060														
MD-265	INT	ALLIGATOR CK	SFH/ORW		20	5	25	4.556						
MD-266	INT	CASINO CK	SFH/ORW		20	6	30	4.505						
RT-02016	RT02	DEVILS DEN CK	ORW		11	2	18	3.805						
MD-203	CS	JEREMY CK	SFH		46	12	26	4.158	*	123	-0.02	*	123	-0.067
RT-01623	RT01	TRIB TO MATHEWS CREEK	SFH		11	3	27	4.717						
MD-267	INT	FIVE FATHOM CK	SFH		19	1	5	4.62						
RO-02008	RO02	FIVE FATHOM CK	SFH		10	2	20	4.490						
MD-250	CS	AWENDAW CK	SFH		21	4	19	4.405						
MD-268	INT	AWENDAW CK	SFH		20	4	20	4.238						
RT-01668	RT01	VANDERHORST CREEK	SFH		11	2	18	4.875						
MD-269	INT	SEWEE BAY	SFH		20	1	5	4.86						
RT-02004	RT02	TRIB TO BACK CK	ORW		11	2	18	4.270						
MD-270	INT	BULLYARD SOUND	ORW		22	1	5	4.66						
MD-271	INT	HAMLIN SOUND	SFH		23	2	9	4.390						
MD-272	INT	HAMLIN CK	SFH		23	3	13	4.720						
RT-02006	RT02	CONCH CK	SFH		12	1	8	4.92						
03050202070														
MD-069	INT	ICWW	**SB**/SFH		56	1	2	3.6	*	165	0	D	159	-0.081
MD-069	INT	ICWW	SB/**SFH**		56	4	7	4.385	*	165	0	D	159	-0.081
MD-071	SPRP	SHEM CK	SB		54	4	7	3.400	*	171	0.032	D	154	-0.093
MD-247	INT	CHARLESTON HARBOR	SB		53	0	0		I	126	0.075	D	114	-0.143
MD-034	CS	ASHLEY RVR	SA		42	0	0		I	160	0.059	D	149	-0.086
MD-165	INT	CHARLESTON HARBOR	SB		55	0	0		I	170	0.06	D	160	-0.1
RO-02016	RO02	CHARLESTON HARBOR	SB		12	0	0							
MD-048	CS	CHARLESTON HARBOR	SB		43	0	0		I	162	0.05	D	146	-0.076
RT-01644	RT01	CLARK SOUND	SB		11	0	0							
RT-02008	RT02	SECOND SISTER CK	SFH		11	2	18	3.995						
MD-274	INT	FOLLY CK	SFH		21	3	14	3.947						
MD-130	INT	FOLLY RVR	SFH		21	2	10	4.215				*	21	0
MD-026	CS	STONO RVR	SFH		43	7	16	4.227	*	160	0	D	158	-0.111
RO-01144	RO01	STONO RIVER	SFH		12	0	0							
MD-206	INT	STONO RVR	SFH		36	6	17	4.368	*	91	0	D	82	-0.128
MD-208	CS	STONO RVR	SFH		26	1	4	4.4	*	84	0.02	D	75	-0.066
MD-273	INT	KIAWAH RVR	SFH		21	2	10	3.940						
MD-207	CS	KIAWAH RVR	SFH		25	2	8	4.315	*	78	0.03	D	71	-0.1
RT-01642	RT01	TRIB TO STONO INLET	SFH		12	0	0							

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION				pH	pH	pH	MEAN	TRENDS (88-2002)			TURB	TURB	TURB	MEAN	TRENDS (88-2002)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	PH	N	MAG	N	EXC.	%	EXC.	TURB	N	MAG
03050202060																	
MD-265	INT	ALLIGATOR CK	SFH/ORW	20	0	0					21	5	24	38.000			
MD-266	INT	CASINO CK	SFH/ORW	20	1	5	6.31				21	2	10	36.000			
RT-02016	RT02	DEVILS DEN CK	ORW	11	0	0					12	0	0				
MD-203	CS	JEREMY CK	SFH	46	3	7	5.363	*	123	0.011	46	20	43	50.250	I	123	0.6
RT-01623	RT01	TRIB TO MATHEWS CREEK	SFH	11	0	0					11	4	36	35.750			
MD-267	INT	FIVE FATHOM CK	SFH	18	0	0					21	4	19	44.250			
RO-02008	RO02	FIVE FATHOM CK	SFH	10	0	0					12	2	17	39.000			
MD-250	CS	AWENDAW CK	SFH	21	6	29	5.867				21	5	24	35.600			
MD-268	INT	AWENDAW CK	SFH	20	0	0					21	4	19	37.000			
RT-01668	RT01	VANDERHORST CREEK	SFH	11	0	0					11	2	18	29.500			
MD-269	INT	SEWEE BAY	SFH	20	0	0					21	1	5	34			
RT-02004	RT02	TRIB TO BACK CK	ORW	11	0	0					12	0	0				
MD-270	INT	BULLYARD SOUND	ORW	22	0	0					23	2	9	34.000			
MD-271	INT	HAMLIN SOUND	SFH	23	0	0					23	2	9	30.500			
MD-272	INT	HAMLIN CK	SFH	23	0	0					23	2	9	30.500			
RT-02006	RT02	CONCH CK	SFH	12	0	0					12	0	0				
03050202070																	
MD-069	INT	ICWW	**SB**/SFH	55	2	4	8.710	D	163	-0.016	54	3	6	59.667	*	160	0.05
MD-069	INT	ICWW	SB/**SFH**	55	2	4	8.710	D	163	-0.016	54	3	6	59.667	*	160	0.05
MD-071	SPRP	SHEM CK	SB	55	3	5	6.710	*	172	-0.005	53	0	0		D	155	-0.119
MD-247	INT	CHARLESTON HARBOR	SB	53	3	6	8.873	D	128	-0.01	52	1	2	28	*	113	-0.052
MD-034	CS	ASHLEY RVR	SA	42	0	0		*	156	-0.005	40	1	3	27	*	148	0.077
MD-165	INT	CHARLESTON HARBOR	SB	54	1	2	8.62	D	168	-0.006	52	1	2	31	*	159	-0.031
RO-02016	RO02	CHARLESTON HARBOR	SB	12	0	0					11	0	0				
MD-048	CS	CHARLESTON HARBOR	SB	42	1	2	8.8	D	159	-0.015	42	5	12	43.600	*	146	0.034
RT-01644	RT01	CLARK SOUND	SB	10	0	0					11	0	0				
RT-02008	RT02	SECOND SISTER CK	SFH	11	0	0					11	0	0				
MD-274	INT	FOLLY CK	SFH	20	0	0					21	3	14	36.000			
MD-130	INT	FOLLY RVR	SFH	20	0	0					21	1	5	63			
MD-026	CS	STONO RVR	SFH	43	0	0		*	158	-0.001	44	8	18	41.250	*	157	-0.1
RO-01144	RO01	STONO RIVER	SFH	11	0	0					12	3	25	37.667			
MD-206	INT	STONO RVR	SFH	35	1	3	2.56	D	90	-0.026	34	5	15	28.200	*	83	0.107
MD-208	CS	STONO RVR	SFH	26	0	0		D	84	-0.03	25	2	8	31.000	*	77	-0.033
MD-273	INT	KIAWAH RVR	SFH	20	0	0					21	0	0				
MD-207	CS	KIAWAH RVR	SFH	26	0	0		D	79	-0.037	25	1	4	31	*	73	0.029
RT-01642	RT01	TRIB TO STONO INLET	SFH	11	0	0					12	5	42	34.000			

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION				TP	TP	TP	MEAN	TRENDS (92-2002)			TRENDS (88-2002)		
NUMBER	TYPE	WATERBODY NAME	CLASS	N	EXC.	%	EXC.	TP	N	MAG	TP	N	MAG
03050202060													
MD-265	INT	ALLIGATOR CK	SFH/ORW										
MD-266	INT	CASINO CK	SFH/ORW										
RT-02016	RT02	DEVILS DEN CK	ORW										
MD-203	CS	JEREMY CK	SFH					*	64	0.003	*	71	0
RT-01623	RT01	TRIB TO MATHEWS CREEK	SFH										
MD-267	INT	FIVE FATHOM CK	SFH										
RO-02008	RO02	FIVE FATHOM CK	SFH										
MD-250	CS	AWENDAW CK	SFH										
MD-268	INT	AWENDAW CK	SFH										
RT-01668	RT01	VANDERHORST CREEK	SFH										
MD-269	INT	SEWEE BAY	SFH										
RT-02004	RT02	TRIB TO BACK CK	ORW										
MD-270	INT	BULLYARD SOUND	ORW										
MD-271	INT	HAMLIN SOUND	SFH										
MD-272	INT	HAMLIN CK	SFH										
RT-02006	RT02	CONCH CK	SFH										
03050202070													
MD-069	INT	ICWW	**SB**/SFH					D	59	-0.002	D	100	-0.002
MD-069	INT	ICWW	SB/**SFH**					D	59	-0.002	D	100	-0.002
MD-071	SPRP	SHEM CK	SB					*	72	0	D	111	-0.002
MD-247	INT	CHARLESTON HARBOR	SB					D	66	-0.003	D	66	-0.003
MD-034	CS	ASHLEY RVR	SA					*	73	0	*	114	0
MD-165	INT	CHARLESTON HARBOR	SB					*	65	0	D	105	-0.001
RO-02016	RO02	CHARLESTON HARBOR	SB										
MD-048	CS	CHARLESTON HARBOR	SB					*	68	0.001	*	108	0
RT-01644	RT01	CLARK SOUND	SB										
RT-02008	RT02	SECOND SISTER CK	SFH										
MD-274	INT	FOLLY CK	SFH										
MD-130	INT	FOLLY RVR	SFH										
MD-026	CS	STONO RVR	SFH					*	65	-0.003	D	108	-0.004
RO-01144	RO01	STONO RIVER	SFH										
MD-206	INT	STONO RVR	SFH								*	46	-0.002
MD-208	CS	STONO RVR	SFH					*	31	-0.004	D	48	-0.002
MD-273	INT	KIAWAH RVR	SFH										
MD-207	CS	KIAWAH RVR	SFH								D	47	-0.002
RT-01642	RT01	TRIB TO STONO INLET	SFH										

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	TN N	TN EXC.	TN %	MEAN EXC.	TRENDS (88-2002) TN	TRENDS (88-2002) N	TRENDS (88-2002) MAG	CHL N	CHL EXC.	CHL %	MEAN EXC.	TRENDS (88-2002) TSS	TRENDS (88-2002) N	TRENDS (88-2002) MAG
03050202060																	
MD-265	INT	ALLIGATOR CK	SFH/ORW														
MD-266	INT	CASINO CK	SFH/ORW														
RT-02016	RT02	DEVILS DEN CK	ORW														
MD-203	CS	JEREMY CK	SFH					*	112	0.005							
RT-01623	RT01	TRIB TO MATHEWS CREEK	SFH														
MD-267	INT	FIVE FATHOM CK	SFH														
RO-02008	RO02	FIVE FATHOM CK	SFH														
MD-250	CS	AWENDAW CK	SFH														
MD-268	INT	AWENDAW CK	SFH														
RT-01668	RT01	VANDERHORST CREEK	SFH														
MD-269	INT	SEWEE BAY	SFH														
RT-02004	RT02	TRIB TO BACK CK	ORW														
MD-270	INT	BULLYARD SOUND	ORW														
MD-271	INT	HAMLIN SOUND	SFH														
MD-272	INT	HAMLIN CK	SFH														
RT-02006	RT02	CONCH CK	SFH														
03050202070																	
MD-069	INT	ICWW	**SB**/SFH					D	139	-0.015							
MD-069	INT	ICWW	SB/**SFH**					D	139	-0.015							
MD-071	SPRP	SHEM CK	SB					D	148	-0.021							
MD-247	INT	CHARLESTON HARBOR	SB					D	101	-0.039							
MD-034	CS	ASHLEY RVR	SA					D	149	-0.024							
MD-165	INT	CHARLESTON HARBOR	SB					D	142	-0.027							
RO-02016	RO02	CHARLESTON HARBOR	SB														
MD-048	CS	CHARLESTON HARBOR	SB					D	144	-0.018					*	92	0.659
RT-01644	RT01	CLARK SOUND	SB														
RT-02008	RT02	SECOND SISTER CK	SFH														
MD-274	INT	FOLLY CK	SFH														
MD-130	INT	FOLLY RVR	SFH														
MD-026	CS	STONO RVR	SFH					D	146	-0.024							
RO-01144	RO01	STONO RIVER	SFH														
MD-206	INT	STONO RVR	SFH														
MD-208	CS	STONO RVR	SFH														
MD-273	INT	KIAWAH RVR	SFH														
MD-207	CS	KIAWAH RVR	SFH														
RT-01642	RT01	TRIB TO STONO INLET	SFH														

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	GEO MEAN	BACT N	BACT EXC.	BACT %	MEAN EXC.	TRENDS (88-2002) BACT	TRENDS (88-2002) N	TRENDS (88-2002) MAG	NH3 N	NH3 EXC.	NH3 %
03050202060														
MD-265	INT	ALLIGATOR CK	SFH/ORW	3.3	21	0	0					7	0	0
MD-266	INT	CASINO CK	SFH/ORW	2.0	20	0	0					6	0	0
RT-02016	RT02	DEVILS DEN CK	ORW	1.4	12	0	0					4	0	0
MD-203	CS	JEREMY CK	SFH	88.3	47	9	19	1366.7	*	124	-0.999	38	0	0
RT-01623	RT01	TRIB TO MATHEWS CREEK	SFH	3.4	11	0	0					3	0	0
MD-267	INT	FIVE FATHOM CK	SFH	1.7	21	0	0					5	0	0
RO-02008	RO02	FIVE FATHOM CK	SFH	1.3	12	0	0					4	0	0
MD-250	CS	AWENDAW CK	SFH	367.5	21	7	33	1442.9				14	0	0
MD-268	INT	AWENDAW CK	SFH	33.1	21	1	5	500.0				5	0	0
RT-01668	RT01	VANDERHORST CREEK	SFH	1.5	10	0	0					1	0	0
MD-269	INT	SEWEE BAY	SFH	3.1	22	0	0					5	0	0
RT-02004	RT02	TRIB TO BACK CK	ORW	1.8	13	0	0					3	0	0
MD-270	INT	BULLYARD SOUND	ORW	1.9	24	0	0					5	0	0
MD-271	INT	HAMLIN SOUND	SFH	1.8	24	0	0					7	0	0
MD-272	INT	HAMLIN CK	SFH	11.7	24	0	0					7	0	0
RT-02006	RT02	CONCH CK	SFH	6.7	13	0	0					5	0	0
03050202070														
MD-069	INT	ICWW	**SB**/SFH	8.8	55	0	0		D	161	-0.43	24	0	0
MD-069	INT	ICWW	SB/**SFH**	8.8	55	0	0		D	161	-0.43	24	0	0
MD-071	SPRP	SHEM CK	SB	67.1	55	7	13	1242.9	*	158	-0.916	25	0	0
MD-247	INT	CHARLESTON HARBOR	SB	5.9	52	0	0		D	112	-1.632	26	1	4
MD-034	CS	ASHLEY RVR	SA	29.4	42	3	7	1233.3	D	148	-3.007	22	0	0
MD-165	INT	CHARLESTON HARBOR	SB	14.5	53	1	2	900.0	D	160	-1.9	27	0	0
RO-02016	RO02	CHARLESTON HARBOR	SB	13.6	12	0	0					5	0	0
MD-048	CS	CHARLESTON HARBOR	SB	8.2	41	0	0		D	145	-0.655	22	1	5
RT-01644	RT01	CLARK SOUND	SB	4.4	11	0	0					2	0	0
RT-02008	RT02	SECOND SISTER CK	SFH	2.9	11	0	0					3	0	0
MD-274	INT	FOLLY CK	SFH	2.8	21	0	0					7	0	0
MD-130	INT	FOLLY RVR	SFH	4.3	21	0	0					4	0	0
MD-026	CS	STONO RVR	SFH	35.9	44	2	5	1600.0	D	158	-1.921	34	1	3
RO-01144	RO01	STONO RIVER	SFH	2.9	12	0	0					1	0	0
MD-206	INT	STONO RVR	SFH	4.7	34	0	0		*	84	0	5	0	0
MD-208	CS	STONO RVR	SFH	1.7	25	0	0		D	79	-0.083	3	0	0
MD-273	INT	KIAWAH RVR	SFH	4.9	21	0	0					5	0	0
MD-207	CS	KIAWAH RVR	SFH	2.5	25	0	0		D	75	0	3	0	0
RT-01642	RT01	TRIB TO STONO INLET	SFH	2.8	12	0	0					3	0	0

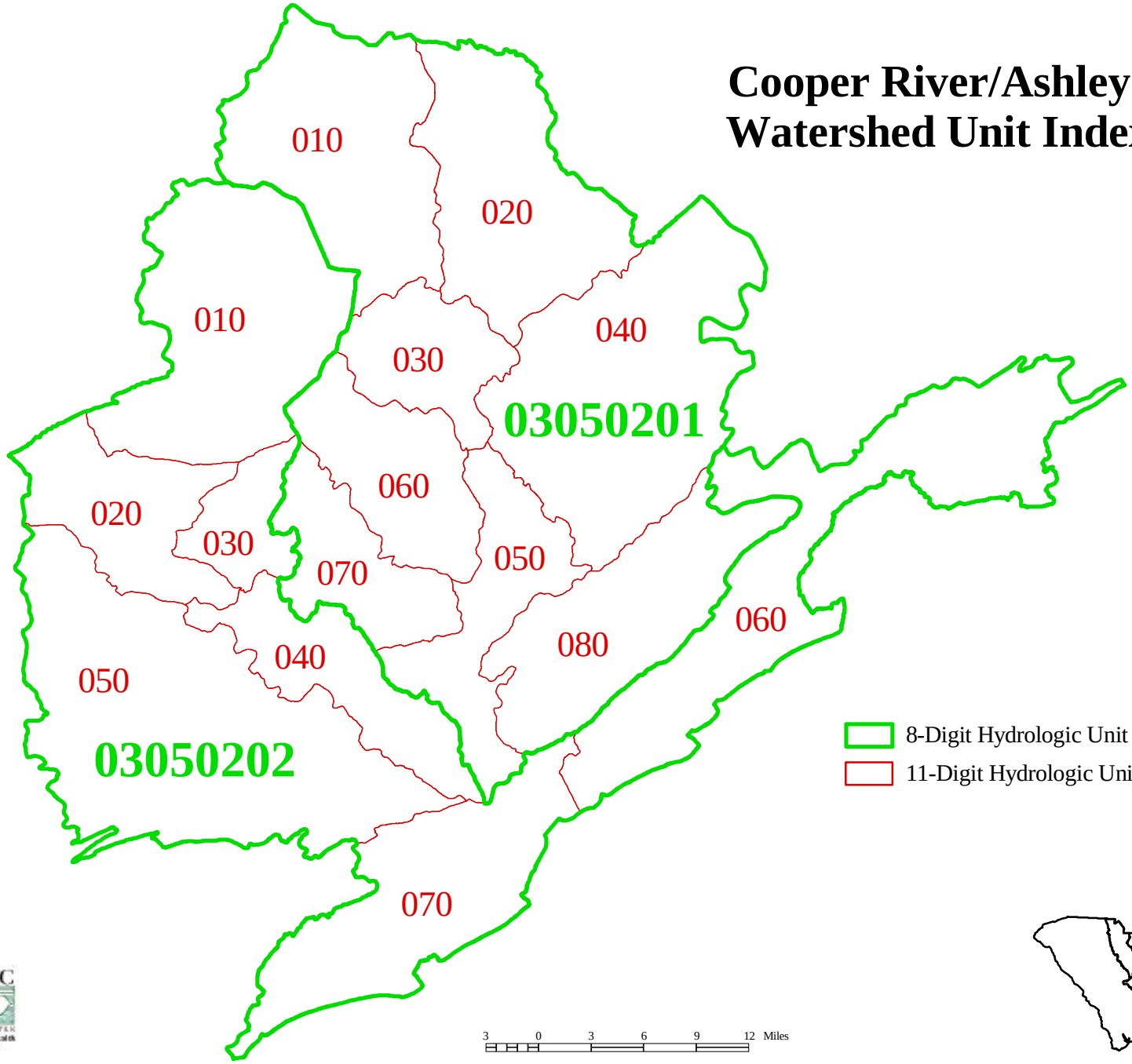
COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

STATION NUMBER	TYPE	WATERBODY NAME	CLASS	CD N	CD EXC.	CD %	MEAN EXC.	CR N	CR EXC.	CR %	MEAN EXC.	CU N	CU EXC.	CU %	MEAN EXC.	PB N	PB EXC.	PB %	MEAN EXC.
03050202060																			
MD-265	INT	ALLIGATOR CK	SFH/ORW	9	0	0		9	0	0		9	1	11	11	9	0	0	
MD-266	INT	CASINO CK	SFH/ORW	9	0	0		9	0	0		9	1	11	51	9	0	0	
RT-02016	RT02	DEVILS DEN CK	ORW	4	0	0		4	0	0		4	2	50	12.5	4	0	0	
MD-203	CS	JEREMY CK	SFH	16	0	0		16	0	0		16	1	6	20	16	0	0	
RT-01623	RT01	TRIB TO MATHEWS CREEK	SFH	5	0	0		5	0	0		5	0	0		5	0	0	
MD-267	INT	FIVE FATHOM CK	SFH	9	0	0		9	0	0		9	0	0		9	0	0	
RO-02008	RO02	FIVE FATHOM CK	SFH	4	0	0		4	0	0		4	0	0		4	0	0	
MD-250	CS	AWENDAW CK	SFH	7	0	0		7	0	0		7	1	14	69	7	0	0	
MD-268	INT	AWENDAW CK	SFH	9	0	0		9	0	0		9	1	11	14	9	0	0	
RT-01668	RT01	VANDERHORST CREEK	SFH	5	0	0		5	0	0		5	0	0		5	0	0	
MD-269	INT	SEWEE BAY	SFH	9	0	0		9	0	0		9	0	0		9	0	0	
RT-02004	RT02	TRIB TO BACK CK	ORW	4	0	0		4	0	0		4	0	0		4	0	0	
MD-270	INT	BULLYARD SOUND	ORW	8	0	0		8	0	0		8	0	0		8	0	0	
MD-271	INT	HAMLIN SOUND	SFH	8	0	0		8	0	0		8	0	0		8	0	0	
MD-272	INT	HAMLIN CK	SFH	8	0	0		8	0	0		8	0	0		8	0	0	
RT-02006	RT02	CONCH CK	SFH	4	0	0		4	0	0		4	0	0		4	0	0	
03050202070																			
MD-069	INT	ICWW	**SB**/SFH	19	0	0		19	0	0		19	2	11	15.5	19	0	0	
MD-069	INT	ICWW	SB/**SFH**	19	0	0		19	0	0		19	2	11	15.5	19	0	0	
MD-071	SPRP	SHEM CK	SB	19	0	0		19	0	0		19	2	11	22.0	19	0	0	
MD-247	INT	CHARLESTON HARBOR	SB	19	0	0		19	0	0		19	0	0		19	0	0	
MD-034	CS	ASHLEY RVR	SA	15	0	0		15	0	0		15	0	0		15	0	0	
MD-165	INT	CHARLESTON HARBOR	SB	19	0	0		19	0	0		19	2	11	11.0	19	0	0	
RO-02016	RO02	CHARLESTON HARBOR	SB	4	0	0		4	0	0		4	1	25	22	4	0	0	
MD-048	CS	CHARLESTON HARBOR	SB	14	0	0		14	0	0		14	0	0		14	0	0	
RT-01644	RT01	CLARK SOUND	SB	4	0	0		4	0	0		4	1	25	67	4	0	0	
RT-02008	RT02	SECOND SISTER CK	SFH	3	0	0		3	0	0		3	0	0		3	0	0	
MD-274	INT	FOLLY CK	SFH	7	0	0		7	0	0		7	0	0		7	0	0	
MD-130	INT	FOLLY RVR	SFH	7	0	0		7	0	0		7	0	0		7	0	0	
MD-026	CS	STONO RVR	SFH	16	0	0		16	0	0		16	2	13	16.0	16	0	0	
RO-01144	RO01	STONO RIVER	SFH	4	0	0		4	0	0		4	0	0		4	0	0	
MD-206	INT	STONO RVR	SFH	7	0	0		7	0	0		7	0	0		7	0	0	
MD-208	CS	STONO RVR	SFH	5	0	0		5	0	0		5	0	0		5	0	0	
MD-273	INT	KIAWAH RVR	SFH	7	0	0		7	0	0		7	0	0		7	0	0	
MD-207	CS	KIAWAH RVR	SFH	5	0	0		5	0	0		5	0	0		5	0	0	
RT-01642	RT01	TRIB TO STONO INLET	SFH	4	0	0		4	0	0		4	0	0		4	0	0	

COOPER AND ASHLEY RIVER BASINS WATER QUALITY SUMMARY

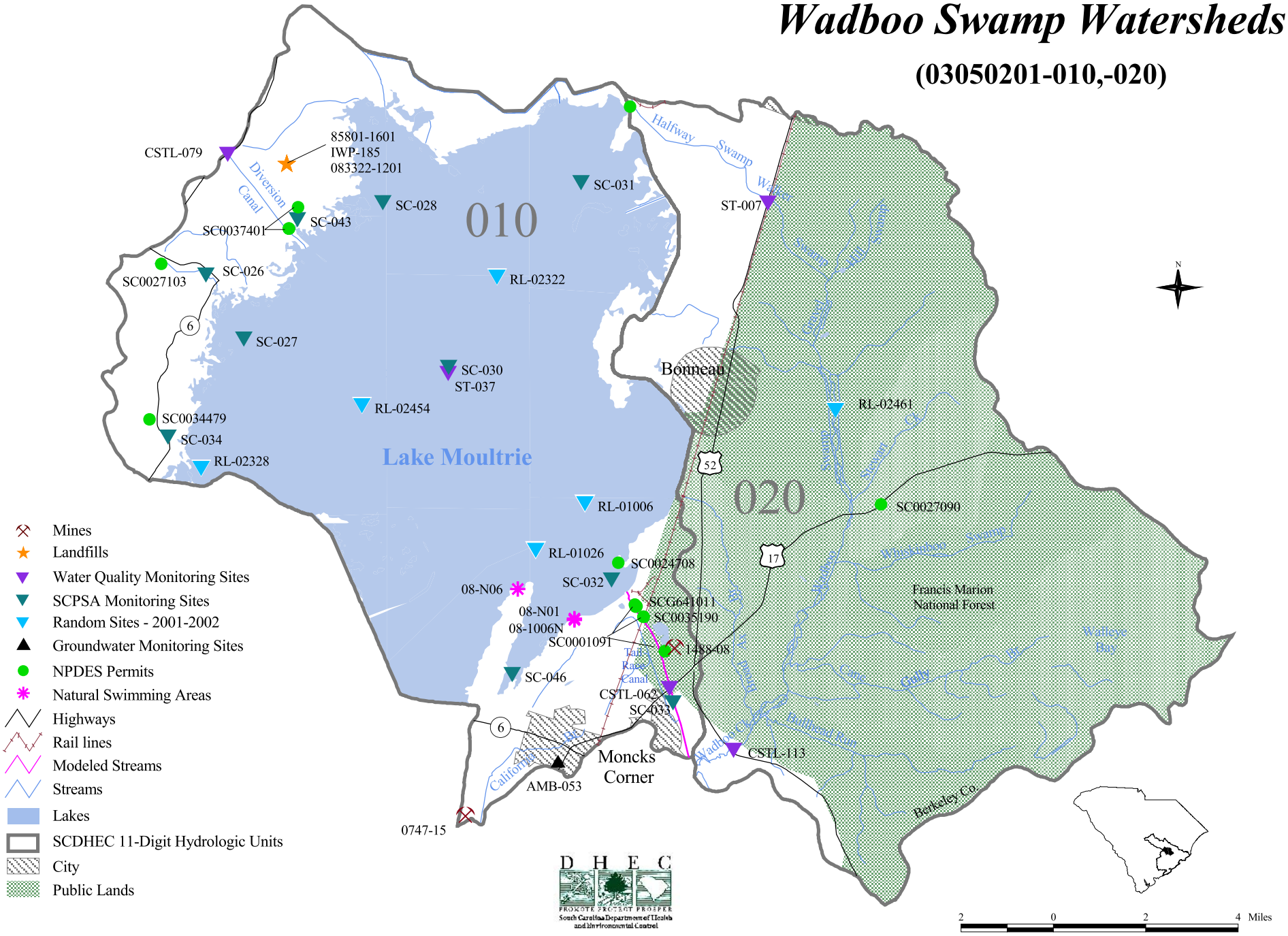
STATION NUMBER	TYPE	WATERBODY NAME	CLASS	HG N	HG EXC.	HG %	NI N	NI EXC.	NI %	MEAN EXC.	ZN N	ZN EXC.	ZN %	MEAN EXC.
03050202060														
MD-265	INT	ALLIGATOR CK	SFH/ORW	9	0	0	9	0	0		9	0	0	
MD-266	INT	CASINO CK	SFH/ORW	9	0	0	9	0	0		9	0	0	
RT-02016	RT02	DEVILS DEN CK	ORW	4	0	0	4	0	0		4	0	0	
MD-203	CS	JEREMY CK	SFH	17	0	0	16	0	0		16	1	6	230
RT-01623	RT01	TRIB TO MATHEWS CREEK	SFH	5	0	0	5	0	0		5	0	0	
MD-267	INT	FIVE FATHOM CK	SFH	9	0	0	9	0	0		9	0	0	
RO-02008	RO02	FIVE FATHOM CK	SFH	4	0	0	4	0	0		4	0	0	
MD-250	CS	AWENDAW CK	SFH	7	0	0	7	1	14	110	7	0	0	
MD-268	INT	AWENDAW CK	SFH	9	0	0	9	0	0		9	0	0	
RT-01668	RT01	VANDERHORST CREEK	SFH	5	0	0	5	0	0		5	0	0	
MD-269	INT	SEWEE BAY	SFH	9	0	0	9	0	0		8	0	0	
RT-02004	RT02	TRIB TO BACK CK	ORW	4	0	0	4	0	0		4	0	0	
MD-270	INT	BULLYARD SOUND	ORW	8	0	0	8	0	0		8	0	0	
MD-271	INT	HAMLIN SOUND	SFH	8	0	0	8	0	0		8	0	0	
MD-272	INT	HAMLIN CK	SFH	8	0	0	8	0	0		8	0	0	
RT-02006	RT02	CONCH CK	SFH	4	0	0	4	0	0		4	0	0	
03050202070														
MD-069	INT	ICWW	**SB**/SFH	19	0	0	19	0	0		19	0	0	
MD-069	INT	ICWW	SB/**SFH**	19	0	0	19	0	0		19	0	0	
MD-071	SPRP	SHEM CK	SB	19	0	0	19	0	0		19	0	0	
MD-247	INT	CHARLESTON HARBOR	SB	19	0	0	19	1	5	610	19	0	0	
MD-034	CS	ASHLEY RVR	SA	15	0	0	15	0	0		15	0	0	
MD-165	INT	CHARLESTON HARBOR	SB	19	0	0	19	0	0		19	0	0	
RO-02016	RO02	CHARLESTON HARBOR	SB	4	0	0	4	0	0		4	1	25	180
MD-048	CS	CHARLESTON HARBOR	SB	14	0	0	14	0	0		14	0	0	
RT-01644	RT01	CLARK SOUND	SB	4	0	0	4	0	0		4	0	0	
RT-02008	RT02	SECOND SISTER CK	SFH	3	0	0	3	0	0		3	0	0	
MD-274	INT	FOLLY CK	SFH	7	0	0	7	0	0		7	0	0	
MD-130	INT	FOLLY RVR	SFH	7	0	0	7	0	0		7	0	0	
MD-026	CS	STONO RVR	SFH	16	0	0	16	1	6	80	16	0	0	
RO-01144	RO01	STONO RIVER	SFH	4	0	0	4	0	0		4	0	0	
MD-206	INT	STONO RVR	SFH	7	0	0	7	0	0		7	0	0	
MD-208	CS	STONO RVR	SFH	5	0	0	5	0	0		5	0	0	
MD-273	INT	KIAWAH RVR	SFH	7	0	0	7	0	0		7	0	0	
MD-207	CS	KIAWAH RVR	SFH	5	0	0	5	0	0		5	0	0	
RT-01642	RT01	TRIB TO STONO INLET	SFH	4	0	0	4	0	0		4	0	0	

Cooper River/Ashley River Watershed Unit Index Map



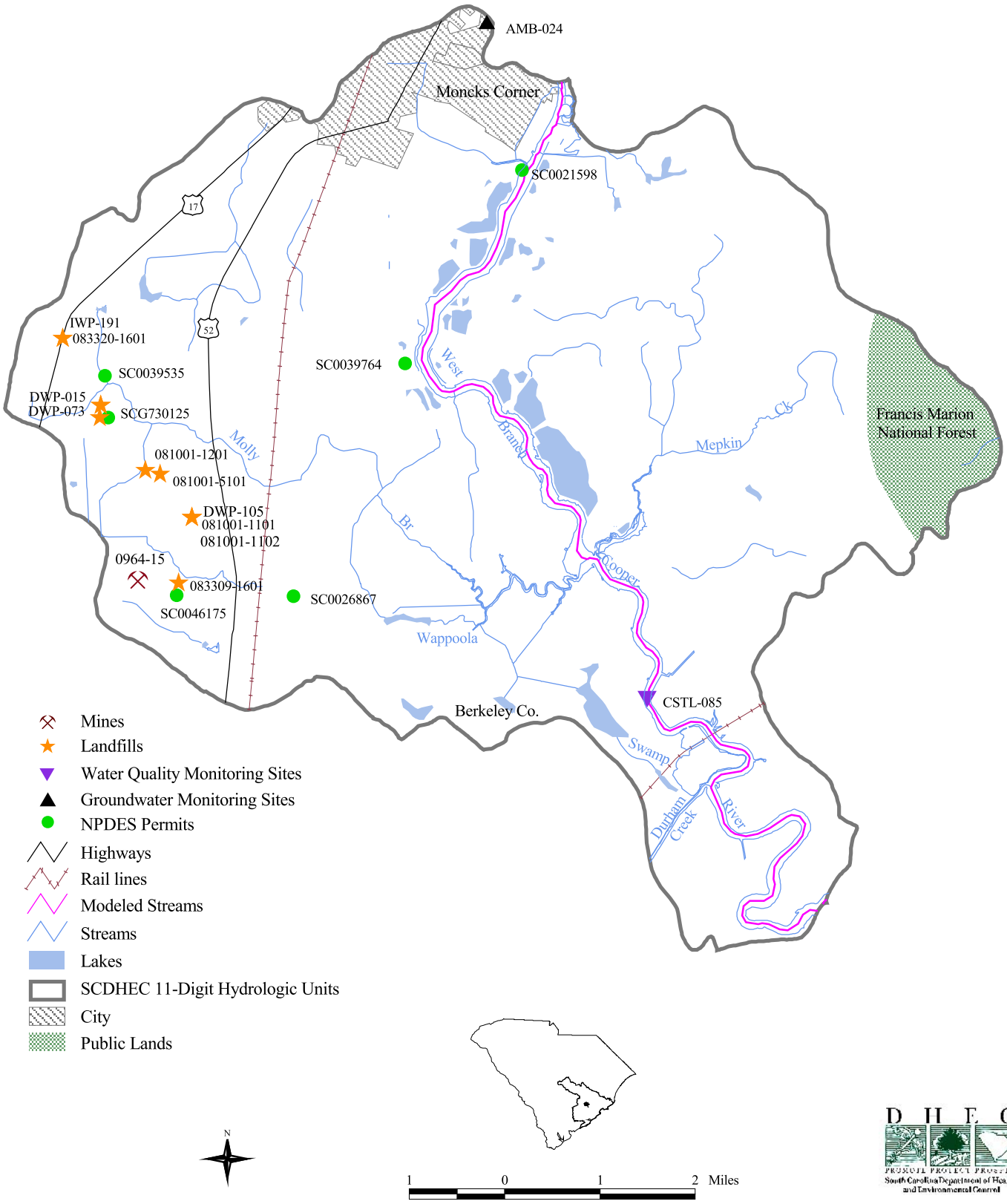
Lake Moultrie and Wadboo Swamp Watersheds

(03050201-010,-020)

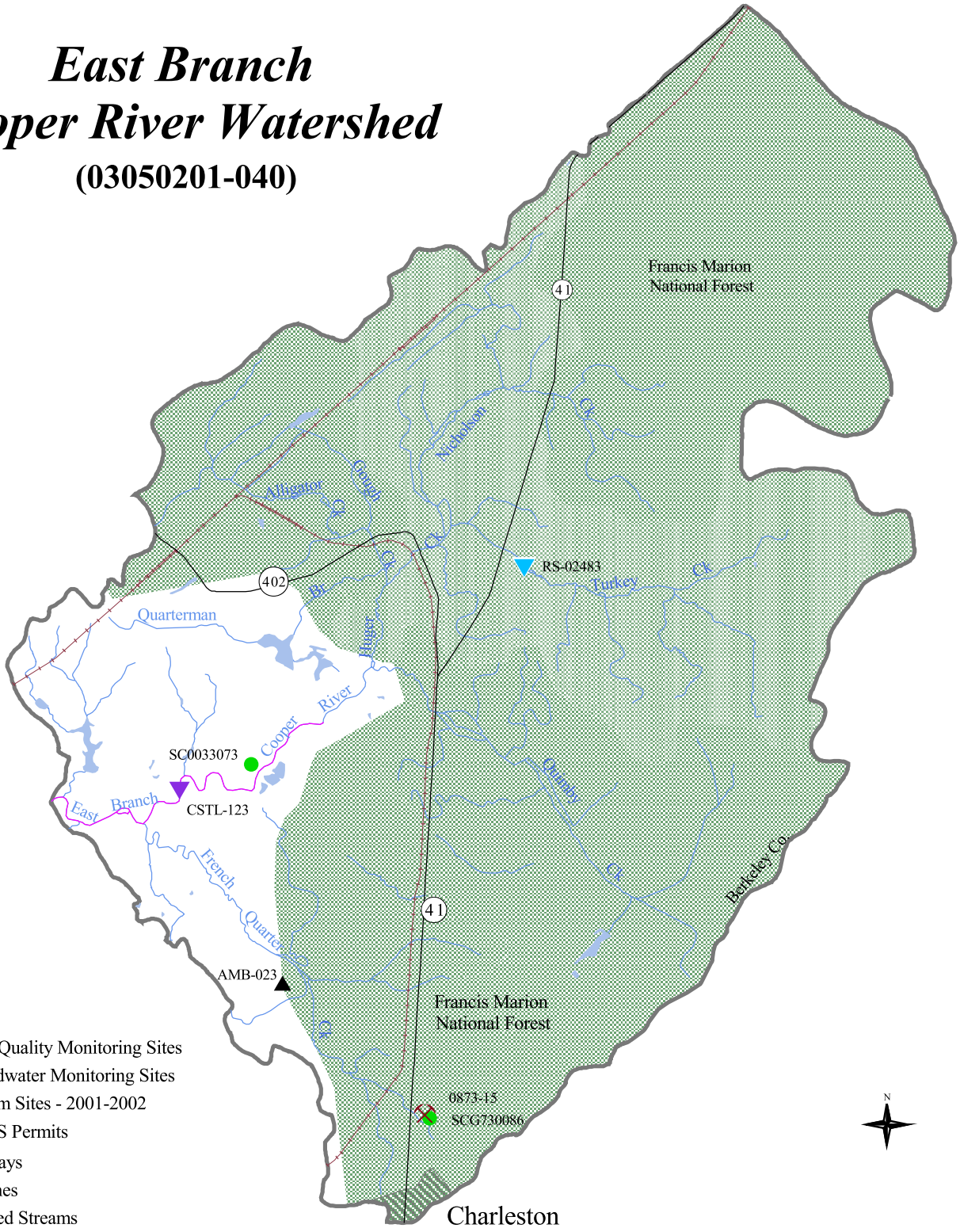


West Branch Cooper River Watershed

(03050201-030)



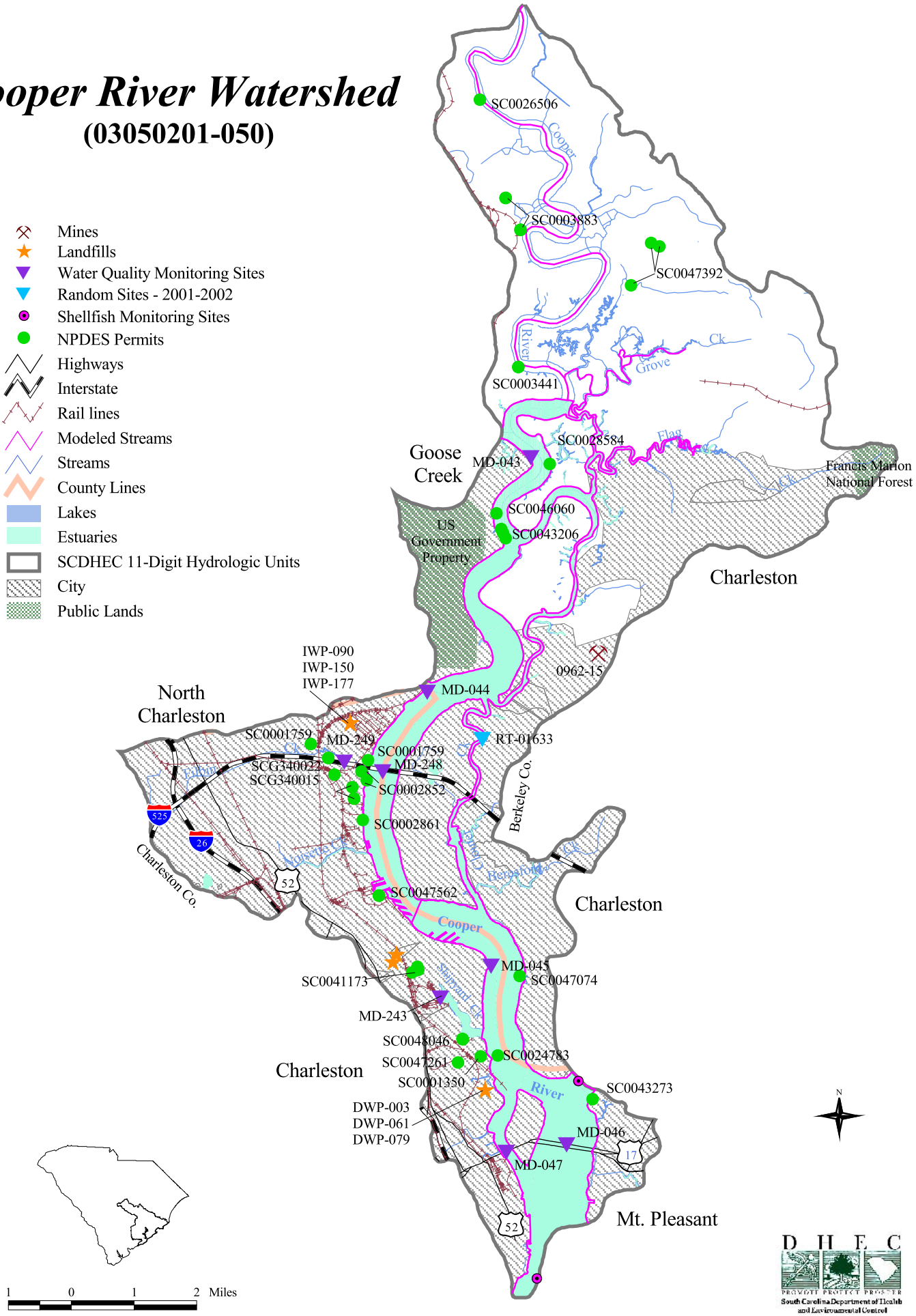
East Branch
Cooper River Watershed
(03050201-040)

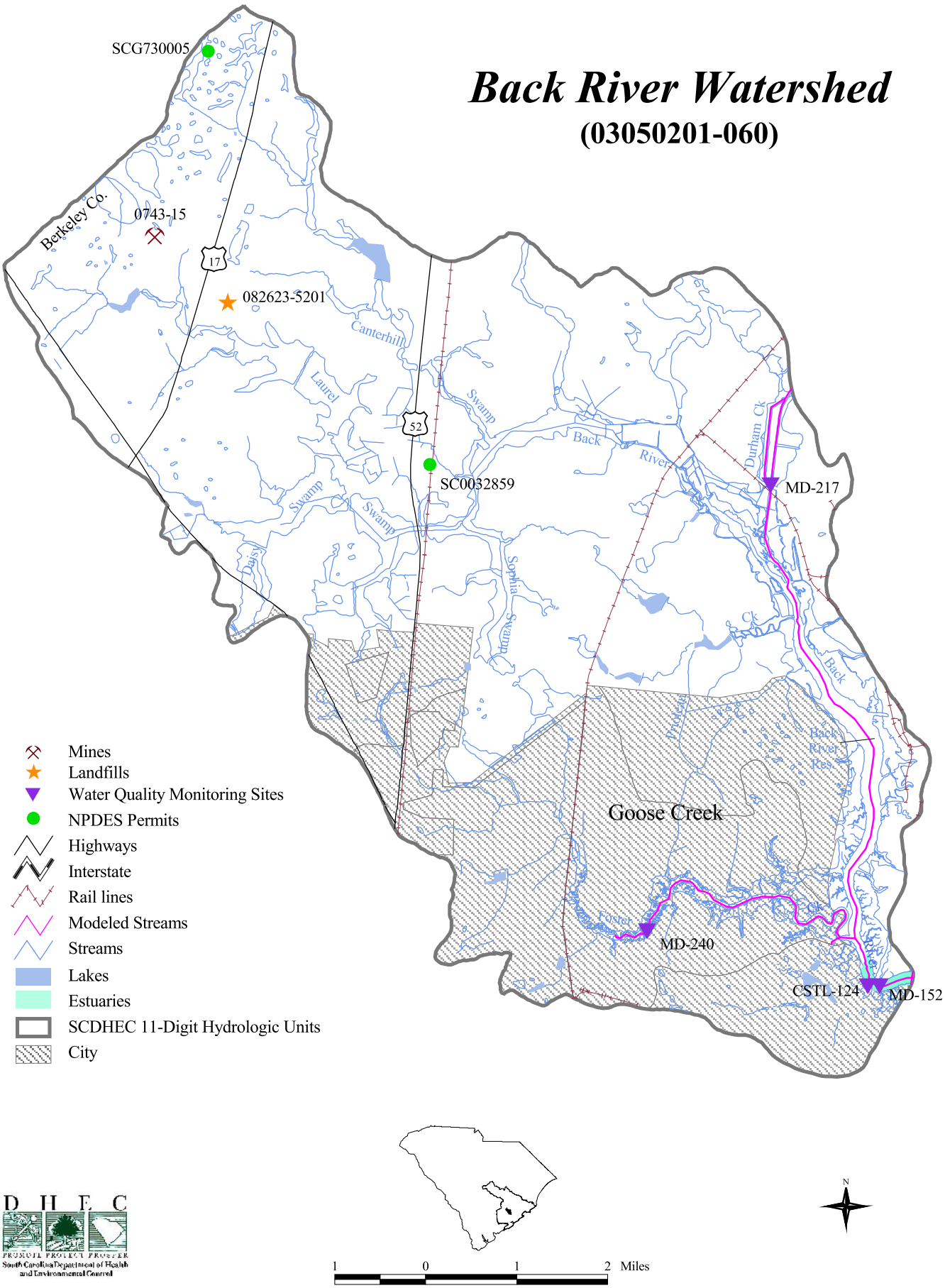


- Mines
- Water Quality Monitoring Sites
- Groundwater Monitoring Sites
- Random Sites - 2001-2002
- NPDES Permits
- Highways
- Rail lines
- Modeled Streams
- Streams
- Lakes
- SCDHEC 11-Digit Hydrologic Units
- City
- Public Lands

2 0 2 4 Miles

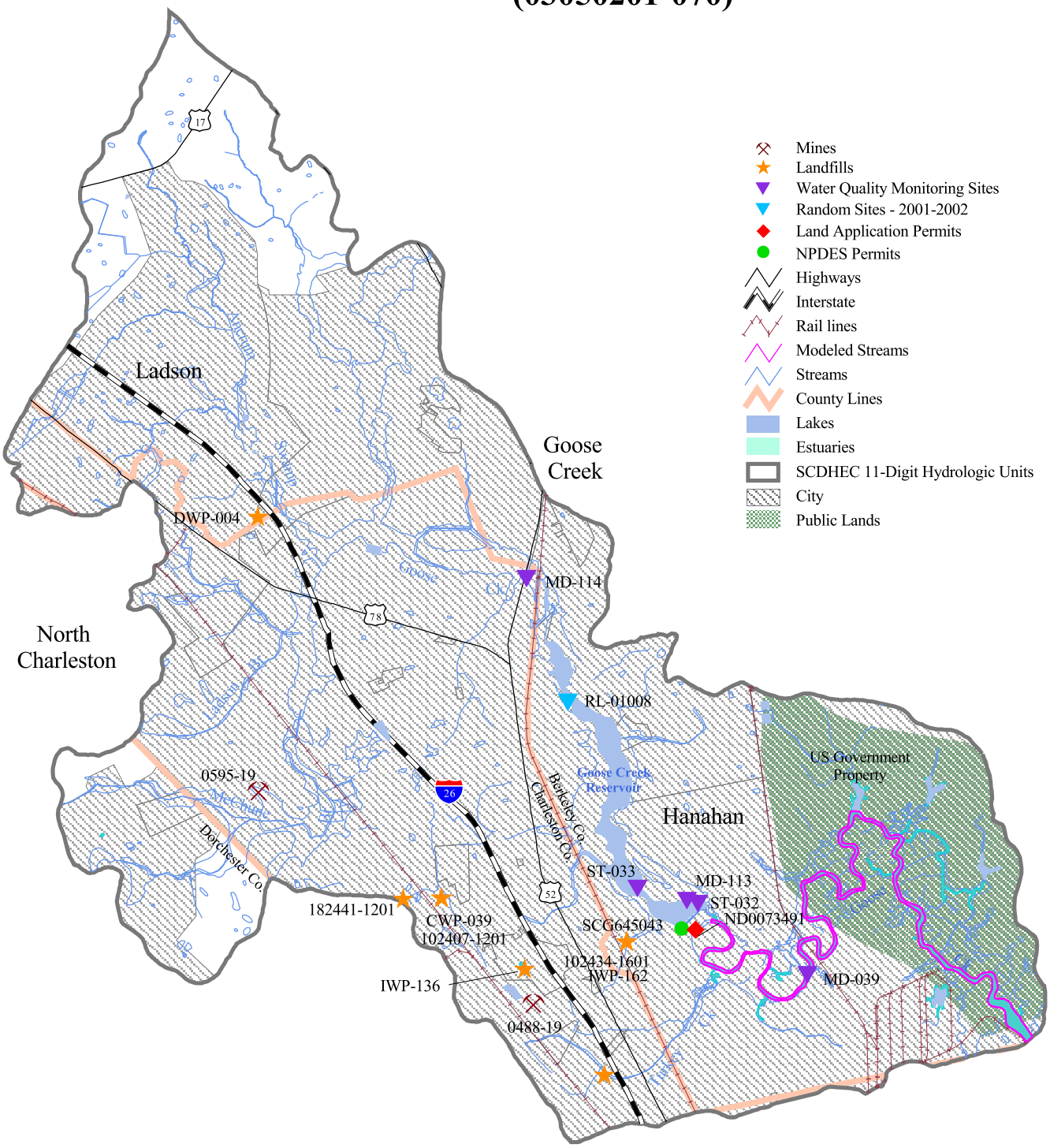
Cooper River Watershed
(03050201-050)




Back River Watershed
(03050201-060)
SCG730005
Berkeley Co.
0743-15
17
082623-5201
Canterhill
Laurel
Swamp
52
SC0032859
Back
River
Durham Ck
MD-217
Daisy
Sophia
Back River Res
Goose Creek
MD-240
CSTL-124
MD-152
Mines
Landfills
Water Quality Monitoring Sites
NPDES Permits
Highways
Interstate
Rail lines
Modeled Streams
Streams
Lakes
Estuaries
SCDHEC 11-Digit Hydrologic Units
City
1 0 1 2 Miles
N

Goose Creek Watershed

(03050201-070)

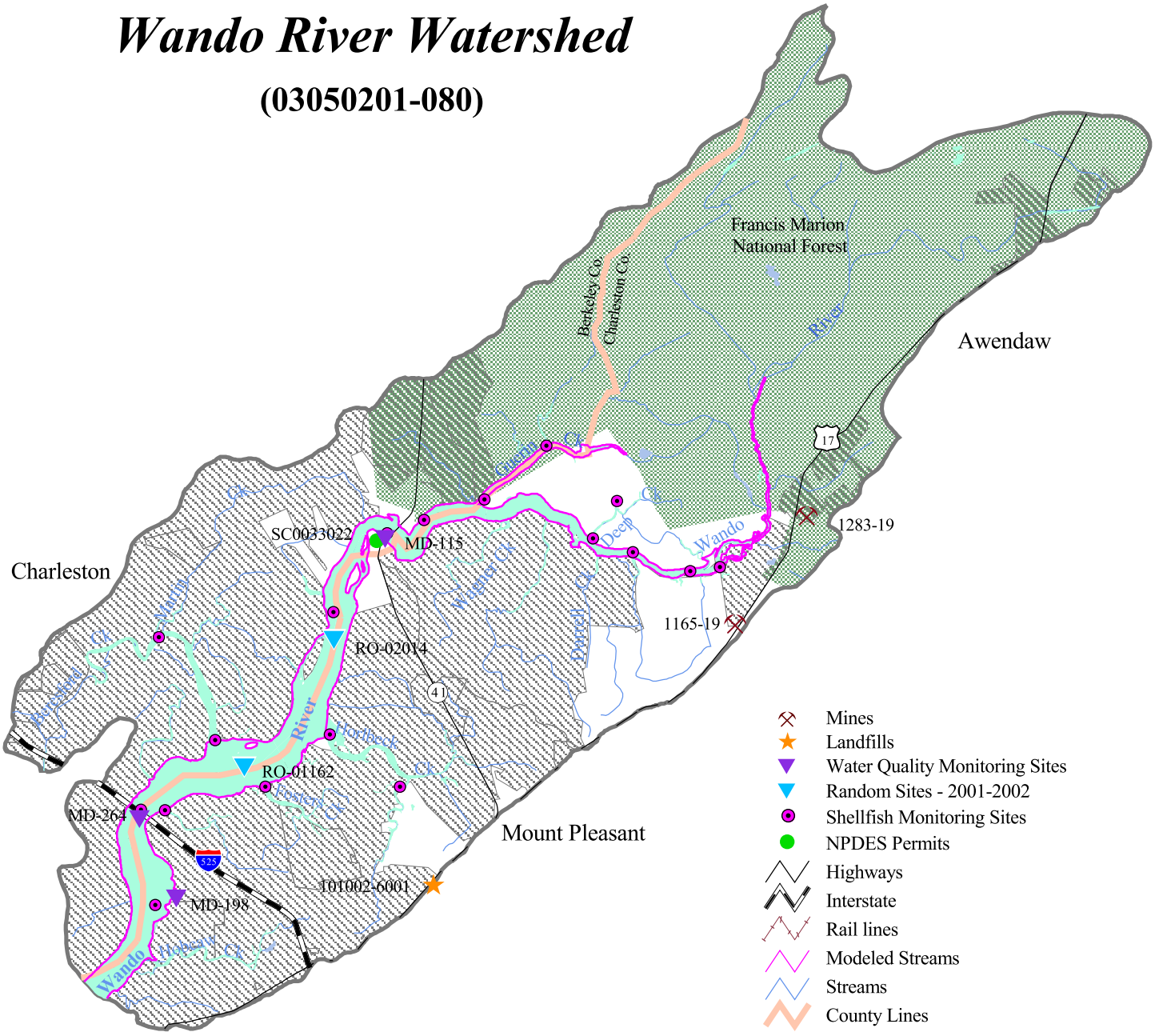


D H E C

South Carolina Department of Health and Environmental Control

Wando River Watershed

(03050201-080)



2 0 2 4 Miles

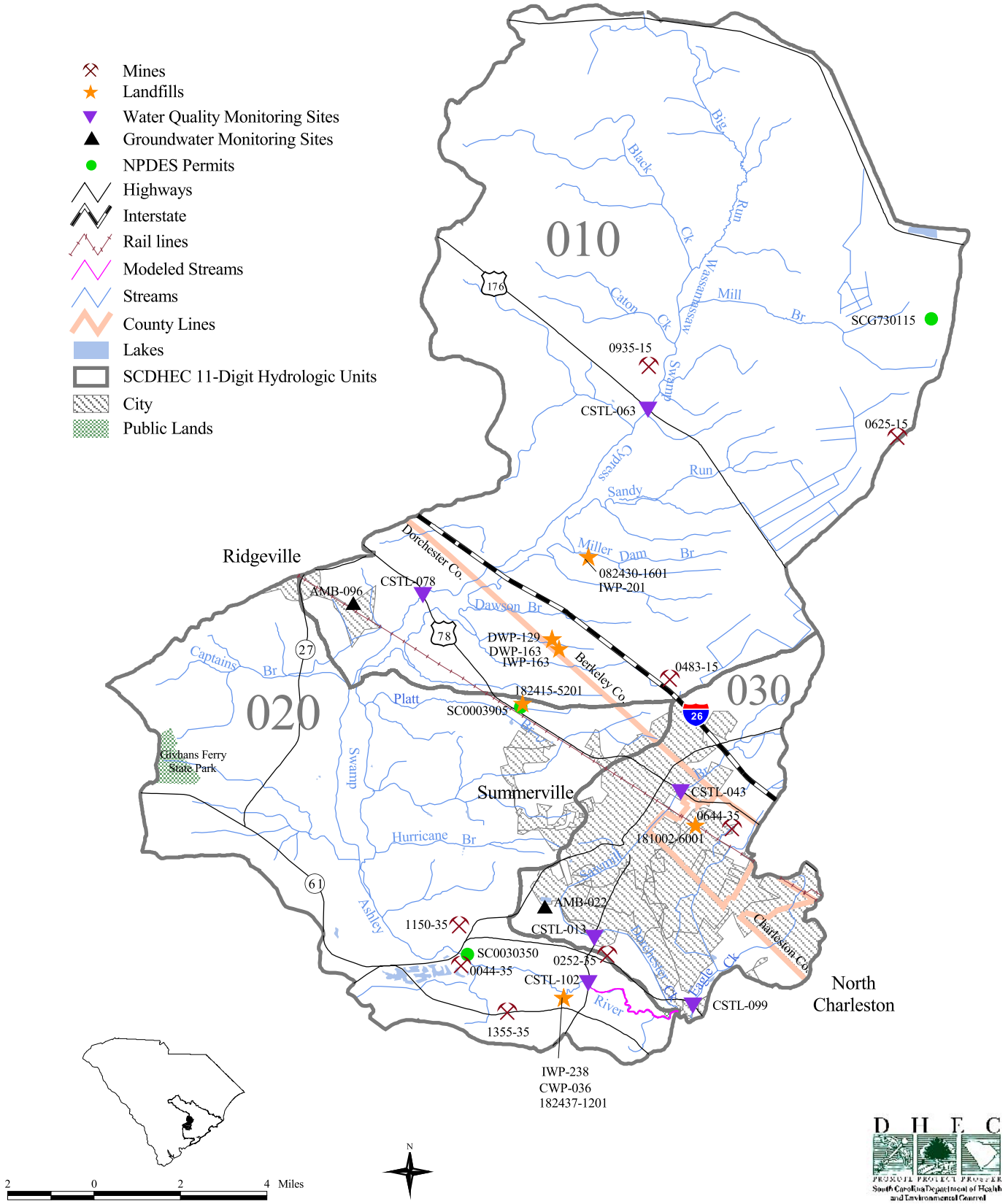
N

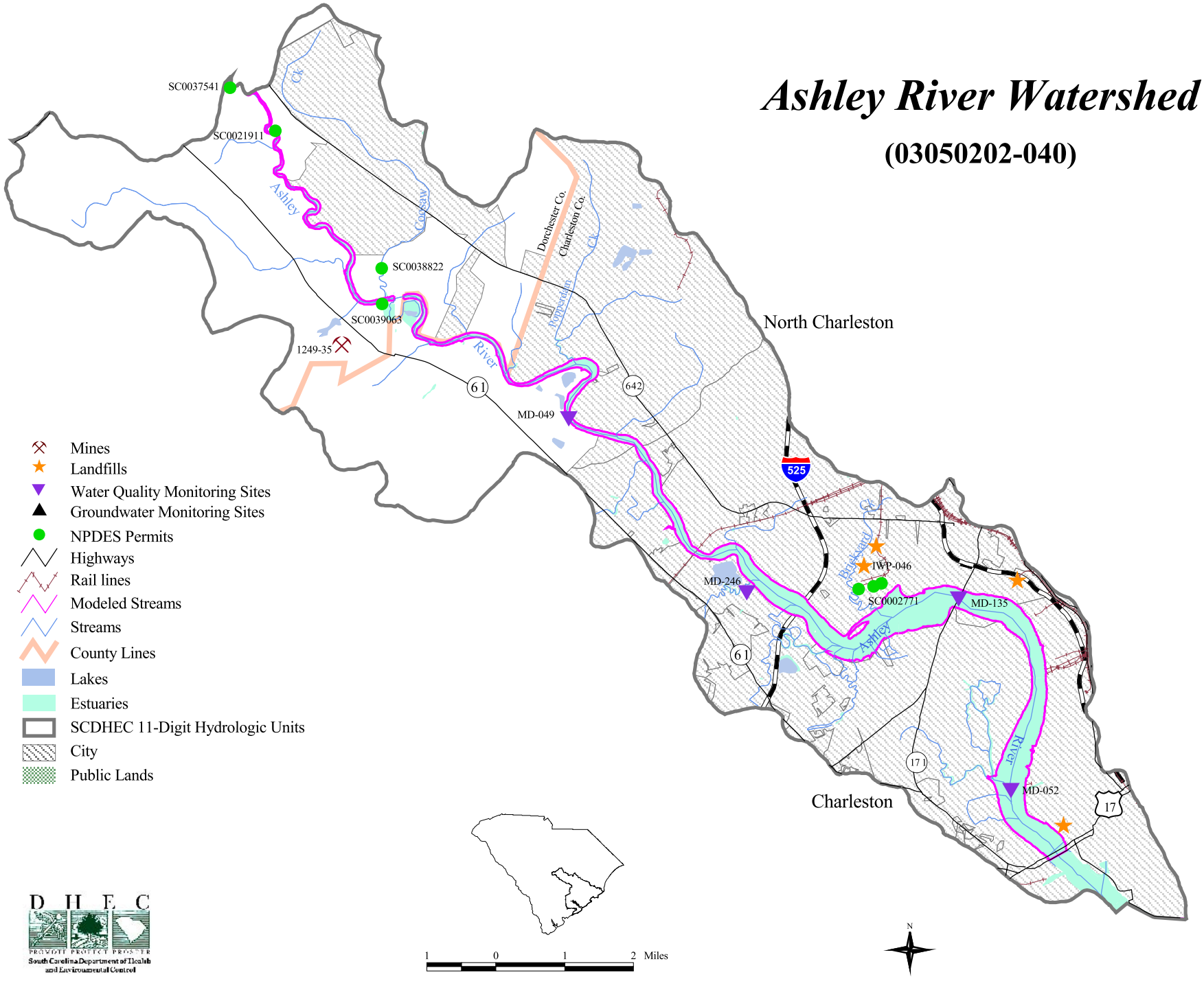
D H E C

South Carolina Department of Health and Environmental Control

Cypress Swamp, Ashley River, and Dorchester Creek/Eagle Creek Watersheds

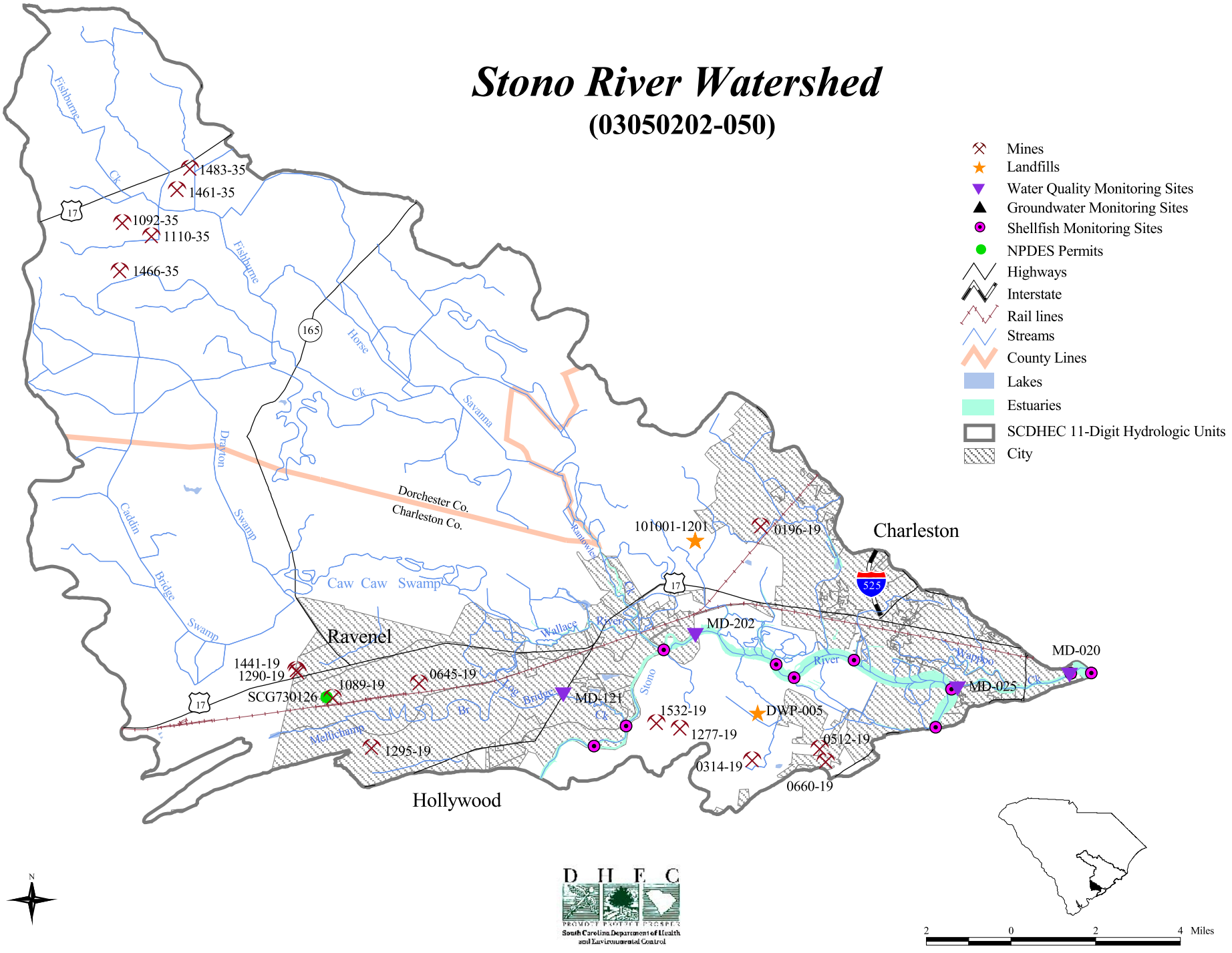
(03050202-010, -020,-030)




Ashley River Watershed
(03050202-040)
SC0037541
SC0021911
SC0038822
SC0039063
1249-35
MD-049
MD-246
IWP-046
SC0002771
MD-135
MD-052
North Charleston
Charleston
Ashley
River
Goose Creek
Dorchester Co.
Charleston Co.
Bypass
Backland Cut
61
642
525
171
17
Mines
Landfills
Water Quality Monitoring Sites
Groundwater Monitoring Sites
NPDES Permits
Highways
Rail lines
Modeled Streams
Streams
County Lines
Lakes
Estuaries
SCDHEC 11-Digit Hydrologic Units
City
Public Lands
1 0 1 2 Miles
N
D H E C
South Carolina Department of Health and Environmental Control

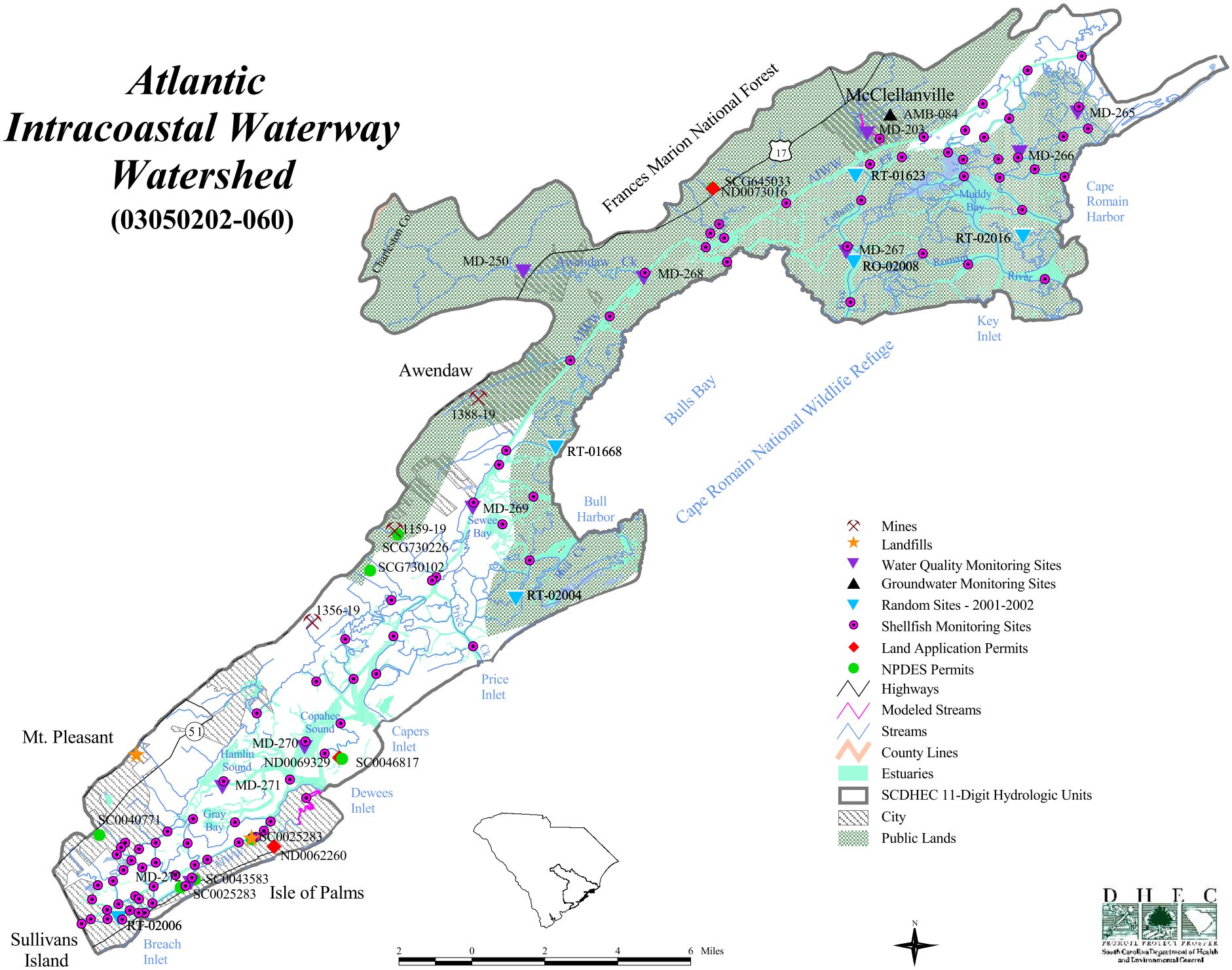
Stono River Watershed

(03050202-050)



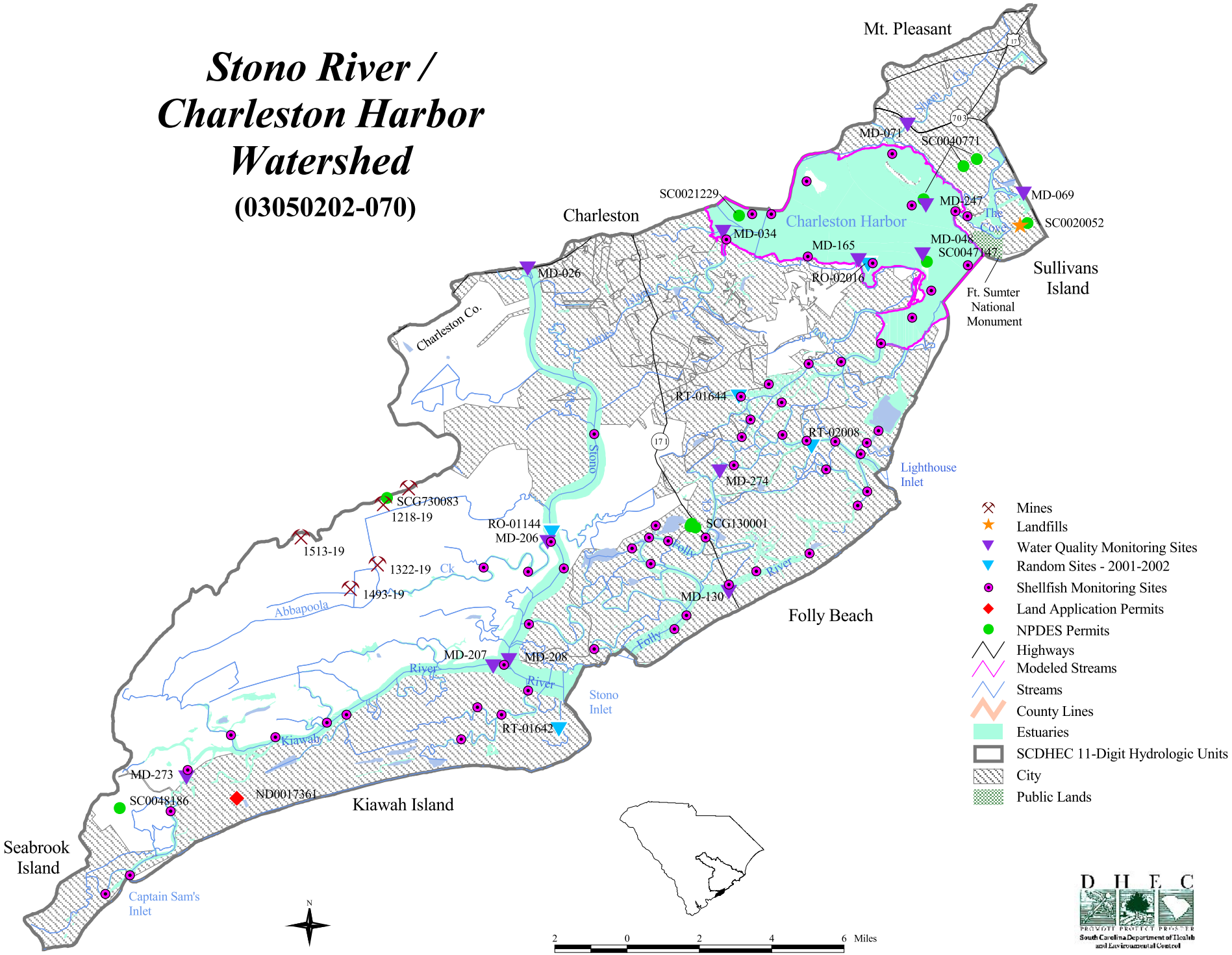
Atlantic Intracoastal Waterway Watershed

(03050202-060)



Stono River / Charleston Harbor Watershed

(03050202-070)



Waterbody Index

Facility Index

Facility Permit Index

Natural SwimmingAreas

Mining

Landfills

Landfills (continued)

www.scdhec.gov

Promoting and protecting the health of the public and the environment.

CR-006335 4/06